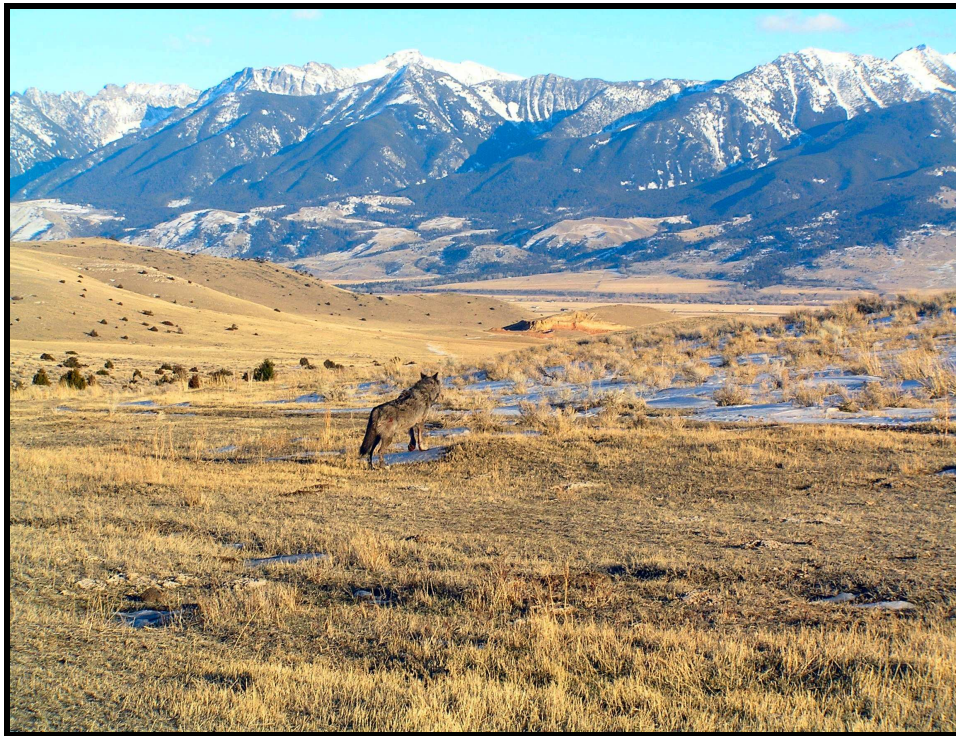


# Rocky Mountain Wolf Recovery 2007 Interagency Annual Report

*A cooperative effort by the U.S. Fish and Wildlife Service, Nez Perce Tribe, National Park Service, Montana Fish, Wildlife & Parks, Idaho Fish and Game, Blackfeet Nation, Confederated Salish and Kootenai Tribes, and USDA Wildlife Services*



*photo by Val Asher*

*This cooperative annual report presents information on the status, distribution and management of the Northern Rocky Mountain wolf population from January 1, 2007 to December 31, 2007.*

*It is also available at:*

**<http://westerngraywolf.fws.gov/annualreports.htm>**

This report may be copied and distributed as needed.

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### ***Note to Readers:***

Because of the transition to state-led management in Montana and Idaho, the 2007 Interagency Annual Report has a similar organization as the 2006 Interagency Report. It is comprised of separate sections, one each for the individual annual reports from the states of Montana and Idaho respectively, federal agencies for Wyoming and Yellowstone National Park combined, and the overall U.S. Fish and Wildlife Service Northern Rockies Recovery Program. This type of organization makes for some degree of overlap and duplication between sections. However, U.S. Fish and Wildlife Service requires Montana and Idaho to submit an annual report each year. By incorporating their state annual reports in this modified structure, the public can still access information about gray wolves in the northern Rockies in a single, comprehensive report.

You can either download the Interagency Report in its entirety and cite the Interagency Report as suggested on the cover. Alternatively, you may download the respective state report or section of the Interagency Report of particular interest and cite as suggested on the cover of that report. I hope you find this useful.

Thank you,

Ed Bangs

U.S. Fish and Wildlife Service Northern Rockies Wolf Recovery Program Coordinator

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## NORTHERN ROCKIES SUMMARY

The gray wolf (*Canis lupus*) population in the Northern Rocky Mountains (NRM) of Montana, Idaho, and Wyoming) continued to increase its distribution and abundance in 2007 (Figure 1, Tables 4a, 4b). Estimates of wolf numbers at the end of 2007 were 830 wolves in the Central Idaho Recovery Area (CID), 453 in the Greater Yellowstone Recovery Area (GYA), and 230 in the Northwest Montana Recovery Area (NWM) for a total minimum estimate of 1,513 wolves (Figure 1, Table 4a). By state boundaries, there were an estimated 422 wolves in Montana, 732 wolves in Idaho, and 359 in Wyoming (Table 4b). Of 192 packs (groups of 2 or more wolves with defined territories on Dec 31), 107 were classified as “breeding pairs,” defined as an adult male and an adult female raising 2 or more pups until December 31 (Tables 4a, 4b). This made 2007 the eighth year in which 30 or more breeding pairs were documented and well distributed within the 3-state area. 2007 was the 4<sup>th</sup> year (and likely 6<sup>th</sup> consecutive year- assuming 2003 and 2004 were simply under-counted due to personnel transitions) that each recovery area contained over 10 breeding pair and 100 wolves. Biological recovery criteria have been met for removing NRM wolves from the Endangered Species list. By the end of 2007, no wolf packs were documented in states adjacent to Montana, Idaho and Wyoming. In 2007, one lone radio-collared wolf from Idaho was confirmed to have dispersed into northeastern Oregon.

Wolves in the NRM subsisted mainly on elk, white-tailed deer, mule deer, moose, and bison. Livestock depredations in 2007 included 183 cattle, 213 sheep, 13 dogs, 12 goats and 2 llamas that were confirmed as killed by wolves (Tables 5a, 5b). Approximately of 60 out of 192 NRM wolf packs (24%) were involved in confirmed livestock depredations. In response, 186 wolves were lethally removed within the 3-state area (about 11% of the 2007 wolf population). No wolves were relocated in 2007. In Montana, about 36% of its 73 packs were confirmed to have killed livestock and in response 73 wolves were killed. In Wyoming outside of Yellowstone National Park, about 52% of 25 wolf packs were involved in confirmed livestock depredations and 63 wolves were killed. In Idaho, 26% of its 83 wolf packs were involved in confirmed livestock depredations and 50 wolves were killed. The 3 populations increasingly merge and resemble and function as a single, large meta-population (Figure 1). Numerous research projects are underway, examining wolf population dynamics, predator-prey interactions and livestock depredation.

## NORTHERN ROCKIES BACKGROUND

Gray wolf populations were extirpated from the western U.S. by the 1930s. Subsequently, wolves from Canada occasionally dispersed south into Montana and Idaho but failed to survive long enough to reproduce. Eventually, public attitudes toward predators changed and wolves received legal protection with the passage of the Endangered Species Act (ESA) in 1973. Wolves began to successfully recolonize northwest Montana in the early 1980s. By 1995, there were 6 wolf packs in northwest Montana. In 1995 and 1996, 66 wolves from southwestern Canada were reintroduced to Yellowstone National Park (YNP) (31 wolves) and CID (35 wolves). In addition in 1996, 10 wolf pups whose pack was involved in chronic livestock

depredation were relocated to Yellowstone National Park. They were released from their holding pen in spring 1997.

The NRM wolf population contains 3 core recovery areas: the NWMT (Figs. 1, 2) includes northern Montana and the northern Idaho panhandle; the GYA (Figs. 1, 3) includes Wyoming and adjacent parts of Idaho and Montana; the CID (Figs. 1, 4) includes central Idaho and adjacent parts of southwest Montana. Wolves in the 3 recovery areas are managed under different guidelines, depending upon their designated status under the ESA.

The wolf population in northwestern Montana and the Idaho panhandle that began from wolves that naturally dispersed from Canada in the early 1980's remain listed as endangered. The GYA and CID wolves are classified as nonessential experimental populations (as allowed by section 10(j) of ESA) and managed with more flexible options than an endangered or threatened population. In 2005 a new 10(j) experimental population regulation allowed even more management flexibility for wolves in the experimental population areas in states with approved wolf management plans (Montana and Idaho). That 2005 rule was liberalized again in early 2008. The states of Montana and Idaho have managed wolves in their states for the past several years, with federal funding and according to federal guidelines.

The U.S. Fish and Wildlife Service (USFWS), responsible for administering the ESA for terrestrial and freshwater species and some marine mammals, determined that at a wolf metapopulation of least 30 or more breeding pairs composed of at least 300 wolves, with an equitable distribution among the 3 states for at least 3 successive years, constitutes a viable and recovered wolf population. Those criteria (including the temporal element) were met at the end of 2002 and at that time 663 wolves in 49 breeding pairs were present. USFWS has proposed delisting throughout the NRM except northwestern WY and a final decision on that rule should be published in late February 2008.

# Montana Gray Wolf Conservation and Management 2007 Annual Report

*A cooperative effort by Montana Fish, Wildlife & Parks, USDA Wildlife Services, Glacier National Park, Yellowstone National Park, Blackfeet Nation, and The Confederated Salish and Kootenai Tribes*



*MFWP Photo by Stefanie Bergh*

*This report presents information on the status, distribution, and management of wolves in the State of Montana, from January 1, 2007 to December 31, 2007.*

It is also available at: [www.fwp.mt.gov/wildthings/wolf](http://www.fwp.mt.gov/wildthings/wolf)

**This report may be copied in its original form and distributed as needed.**

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## MONTANA EXECUTIVE SUMMARY

Wolf recovery in Montana began in the early 1980's. Gray wolves increased in number and expanded their distribution in Montana because of natural emigration from Canada and a successful federal effort that reintroduced wolves into Yellowstone National Park (YNP) and the wilderness areas of central Idaho. The U.S. Fish and Wildlife Service (USFWS) approved the Montana Gray Wolf Conservation and Management Plan in early 2004, but delisting in the northern Rockies (NRM) was delayed. When federal funding became available later in 2004, Montana Fish, Wildlife & Parks (MFWP) began managing wolves in northwestern Montana under a cooperative agreement with USFWS. In 2005, Montana expanded its responsibility for wolf conservation and management statewide under an interagency cooperative agreement. The agreement allows Montana to implement its federally-approved state plan to the extent possible and within the guidelines of federal regulations.

Using federal funds, MFWP monitors the wolf population, directs problem wolf control and take under certain circumstances, coordinates and authorizes research, and leads wolf information and education programs. MFWP wolf management specialists were hired in 2004 and are based throughout western and central Montana. A program coordinator is based in Helena.

The Montana wolf population increased from 2006 to 2007. The increase is due to a real increase in actual wolf numbers primarily in NWMT and far western Montana. The greatest increase occurred in the Montana portion of the Central Idaho Recovery Area south of Lolo Pass and west of I-15.

A total of 73 verified packs of 2 or more wolves yielded a minimum estimate of 422 wolves in Montana. Thirty-nine packs qualified as a Breeding Pair according to the federal recovery definition (an adult male and female with two surviving pups on December 31). Across the southern Montana experimental area (Central Idaho and Greater Yellowstone areas combined), there were 37 packs, 16 of which met the Breeding Pair criteria. A minimum of 209 wolves were estimated (87 in the GYA and 122 in the CID). Across the northwest Montana endangered area, there were 36 packs, 23 of which met the breeding pair criteria. A minimum of 213 wolves was estimated in the NWMT endangered area.

Montana Wildlife Services (WS) confirmed that 75 cattle, 27 sheep, 3 dogs, 1 llama, and 12 domestic goats were killed by wolves in calendar year 2007. Additional losses (both injured and dead livestock) most certainly occurred, but could not be confirmed. Most depredations occurred on private property. Seventy three wolves were killed to reduce the potential for further depredations. Of the 73, 62 were killed by USDA Wildlife Services, 7 were killed by private citizens under the 2005 10j regulations and 4 were killed by private citizens who had been issued a permit in the experimental area of southern Montana.

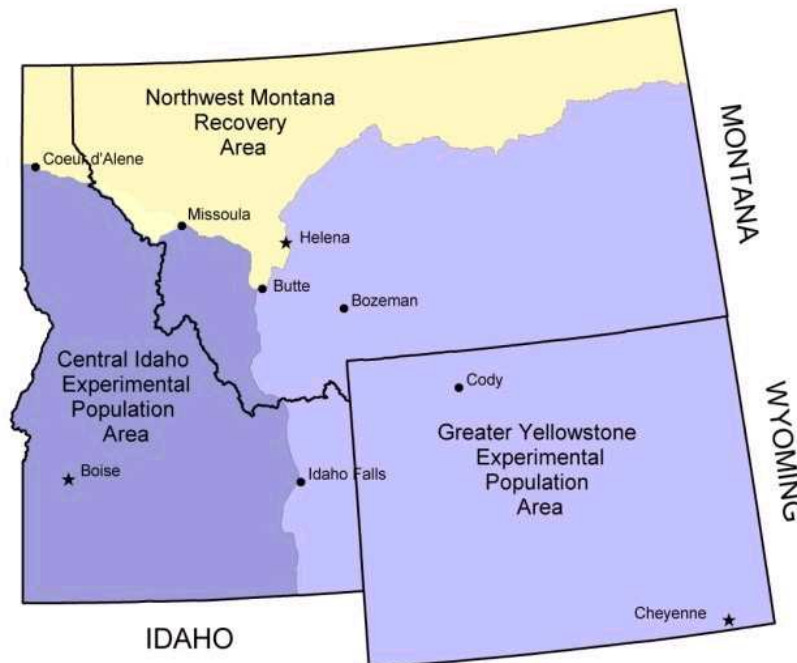
Wolves in Montana prey primarily on elk, deer, and moose. Numerous research projects are investigating wolf-ungulate relationships. Montana Fish, Wildlife & Parks recently compiled research results of wolf-ungulate interactions in southwest Montana. This report and other information about wolves and the Montana program are available at [www.fwp.mt.gov/wildthings/wolf](http://www.fwp.mt.gov/wildthings/wolf).

## INTRODUCTION AND BACKGROUND

Wolf recovery in Montana began in the early 1980's. Gray wolves increased in number and expanded their distribution in Montana because of natural emigration from Canada and a successful federal effort that reintroduced wolves into Yellowstone National Park (YNP) and the wilderness areas of central Idaho. Montana contains portions of all 3 federal recovery areas: the Northwest Montana Endangered Area (NWMT), the Central Idaho Experimental Area (CID), and the Greater Yellowstone Experimental Area (GYA) (Figure 1).

The biological requirements for wolf recovery in the northern Rocky Mountains of Montana, Idaho, and Wyoming were met in December 2002. Before the U.S. Fish and Wildlife Service (USFWS) can propose to delist gray wolves, federal managers must be confident that a secure, viable population of gray wolves will persist if protections of the Endangered Species Act (ESA) were removed. To provide that assurance, the states of Montana, Idaho, and Wyoming developed wolf conservation and management plans and adopted other regulatory mechanisms in state law.

In late 2003, all 3 states submitted wolf management plans to USFWS for review. Based on the USFWS's independent review of the state management plans and state law, analysis of the comments of independent peer reviewers and the states' responses to those reviews, USFWS approved the Montana and Idaho management plans as being adequate to assure maintenance of their state's share of the recovered tri-state wolf population. Wyoming's plan, however, was not approved. USFWS will not propose delisting until the Wyoming plan and associated state laws can be approved.



**Figure 1.** Northern Rockies gray wolf recovery area comprised of the states of Montana, Idaho, and Wyoming

After amending its Record of Decision to comply with the Montana Environmental Policy Act, MFWP increased its role in day-to-day wolf recovery and management in northwest Montana under an interim interagency cooperative agreement even though wolves remain protected under the federal Endangered Species Act. USFWS provided direct funding.

In 2005, MFWP expanded its responsibility for wolf conservation and management statewide. Additional federal funding became available through Congress, beginning in federal fiscal year 2004. A new MFWP-USFWS interagency cooperative agreement was finalized in June 2005. With a clear agreement in place and federal funding to support the work, MFWP became the lead agency for wolf conservation and management statewide in June 2005, though its role and participation gradually increased from spring 2004 to June 2005. The agreement is effective through June 2010, or until the wolf population in Montana is removed from the federal list of threatened or endangered species, or until amended by either party.

The cooperative agreement allows Montana to implement its approved state plan to the extent possible and within the guidelines of federal regulations. The cooperative agreement authorizes Montana to conduct traditional wolf management such as population monitoring, direct problem wolf control, take wolves under certain circumstances, coordinate and authorize research, and coordinate and lead wolf information and education programs. Montana is committed to maintaining the recovered status of its share of the NRM wolf population.

In 2007, USFWS proposed changes to the federal regulation pertaining to the 10j experimental area across southern Montana. Between 200,000 and 300,000 public comments were received and USFWS was expected to make a decision early in 2008.

Also in 2007, USFWS proposed a Northern Rockies Distinct Population Segment and to delist gray wolves from the federal Endangered Species Act. Two alternative delisting scenarios were discussed. One option was delisting within the states of Montana and Idaho only. The other option included Wyoming, pending USFWS acceptance of its state management plan and state law. Between 200,000 and 300,000 comments were received. USFWS is expected to make a final decision early in 2008.

This annual report presents information on the status, distribution, and management of wolves in the State of Montana from January 1 to December 31, 2007.

## **STATEWIDE PROGRAM OVERVIEW**

The Montana Wolf Conservation and Management Plan is based on the work of a citizen's advisory council. Completed in 2003, the foundations of the plan are to recognize gray wolves as a native species and a part of Montana's wildlife heritage, to approach wolf management similar to other wildlife species such as mountain lions, to manage adaptively, and to address and resolve conflicts.

However, because wolves are still listed, some elements of Montana's plan cannot be implemented. The legal classification and federal regulations place wolves into 2 separate

categories in Montana – endangered in northern Montana and experimental non-essential across southern Montana (Figure 2). Wolf-livestock conflicts are addressed and resolved using a combination of the statewide adaptive management triggers identified in the Montana plan and the federal regulations. In northwest Montana, the 1999 Interim Control Plan provides less flexibility to agencies and livestock owners. In contrast, more flexibility is provided through the revised 10(j) regulations (finalized in February 2005).

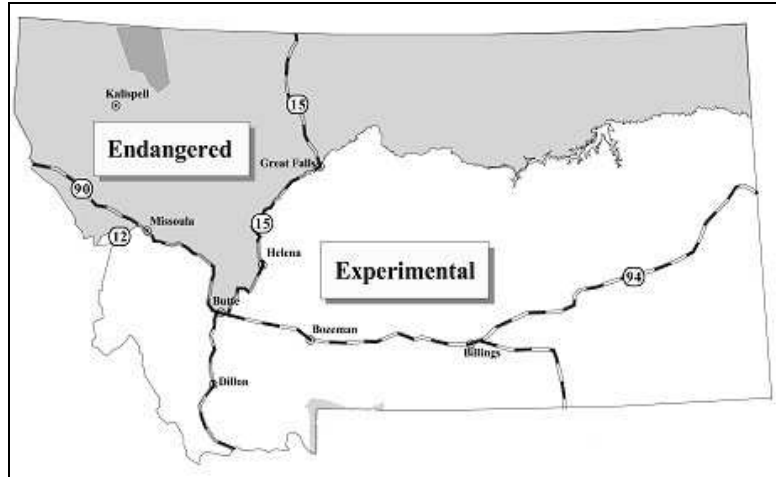
In the early stages of implementation, a core team of experienced individuals led wolf monitoring efforts and worked directly with private landowners. MFWP's wolf team also worked closely with and increasingly involved other MFWP personnel in program activities. As time goes by, Montana wolf conservation and management will transition to a more fully integrated program, led and implemented at the MFWP Regional level. USDA Wildlife Services (WS) investigates injured and dead livestock, and MFWP works closely with them to resolve conflicts.

### **Overview of Wolf Ecology in Montana**

Wolves were distributed primarily in the NRM region of western Montana east to the Beartooth face near Red Lodge. Montana wolf pack territories average around 200 square miles in size but can be 300 square miles or larger. Montana packs include a combination of public and private lands. The average pack territory in Montana is comprised of about 30% private land. Most Montana packs do not live strictly in back country wilderness areas. Of the 73 packs in Montana, 10 (about 14% of all Montana packs) reside most of the year in remote backcountry or wilderness areas or Glacier National Park. Many others live in public land areas with more public access and habitat fragmentation than wilderness areas or Glacier National Park. However, the majority of Montana wolf packs live in areas where mountainous terrain, intermountain valleys, and public / private lands are intermixed.

Dispersal distances in the northern Rockies average about 60 miles, but dispersals over 500 linear miles have been documented. A 500-mile radius from any wolf pack in YNP, Glacier National Park (GNP), or any pack in western Montana would plausibly reach all the way to Montana's eastern border. Montanans should be aware that wolves are established well enough in the northern Rockies now that a wolf could appear where none has been seen for decades. Wolves are capable of covering long distances in relatively short periods of time and often travel separately or in smaller groups. The travel ability of wolves, combined with the fact that packs split, with sub-groups traveling separately, can give an impression that there are more wolf packs and territories than is actually the case. Pack monitoring efforts, especially when combined with public / agency wolf reports, eventually leads to a conclusion about how many packs exist.

Wolf packs are family groups that consist of a breeding pair and their offspring of the current year and/or previous years and occasionally unrelated wolves. Offspring usually disperse from the natal pack at 1, 2 or 3 years of age. From, 1995 to 2006, the average pack in Montana was approximately 5.5 animals. In 2007, the average pack size in Montana was 5.7 animals. There was no difference in average size of wolf packs in the northern endangered area and the southern experimental area.



**Figure 2.** Map of the interim federal wolf management areas showing the endangered area where the 1999 Interim Wolf Control Plan applies and the experimental area where the 10(j) regulations apply. The central Idaho and Greater Yellowstone experimental areas are shown as one since the approved status of Montana’s state wolf plan allows the special 10(j) regulations to apply equally in each area.

Montana wolves can be black, gray, or nearly white. Wild wolves are sometimes mistaken for coyotes or domestic dogs. But a wolf’s large size, long legs, narrow chest, large feet, and wide / blocky head and snout distinguish it from the other canid species. Adult male wolves average about 100 pounds, but can weigh as much as 130 pounds. Females weigh slightly less.

### Population Estimation and Monitoring Methods

The statewide Montana wolf population was estimated on a calendar year basis (January to December). A mid-year estimate is completed and made available, usually in September. It was based on preliminary denning and litter information for packs that carried over from the previous calendar year and any “new” packs that were verified by mid-year. A year-end estimate was made on December 31, based upon the best available information.

There can be considerable changes between September and December estimates. Some packs may appear in the mid-year estimate but drop out between the September and the December estimate if it was not verified during the second half of the year. Some “new” packs were verified for the first time between the mid-year and year-end estimates. The mid-year estimate and the final year-end estimate were both considered minimum counts because of the significant logistical challenges associated with monitoring a wide-ranging species with large home ranges. It was not possible to count every wolf in Montana, but MFWP did use all available information that could be verified.

Wolf monitoring is conducted using a variety of tools and techniques in combination, as is the case for other wildlife species. Common wolf monitoring techniques include: radio telemetry, howling and track surveys, reports from the public and other natural resource agency professionals, and reports from private landowners. MFWP made a concerted effort in 2005 to

invite the public to help monitor wolves in Montana by sharing information about wolves or wolf sign they observed while afield. The MFWP website now offers a way for the public to report their information electronically (see [www.fwp.mt.gov/wildthings/wolf](http://www.fwp.mt.gov/wildthings/wolf)). Public reports were a tremendous help in prioritizing MFWP's field efforts. A wolf pack must be verified by agency personnel to be included in the final statewide population estimate.

A typical sequence is as follows. MFWP and other agency cooperators receive a report of a wolf observation, wolf sign, or injured/dead livestock from the public or an agency colleague. Because it is very difficult to gauge the reliability and validity of the report and it is even more difficult to verify given how much wolves travel and environmental conditions which obliterate tracks or degrade scats, these reports are logged into a database with as much spatially explicit information as is provided. Reports of lone animals or wolf sign must eventually be linked to other reports to build a pattern or cluster, which in turn helps direct and prioritize field efforts. If MFWP receives reports of multiple individuals (group of wolves or multiple sets of tracks), pair bonding and pack territory establishment are highly likely. These eventually can form a pattern as well.

MFWP has and will continue to use volunteers who systematically search areas of current wolf reports, areas of past wolf activity, or noted "gaps" in wolf activity despite adequate prey base. MFWP personnel also conduct systematic searches. Track logs are taken during these "routes" and waypoints recorded when wolf sign is found.

The next step occurs when patterns and field reconnaissance yield enough information to validate wolves were in the area. A decision was made about whether to try and capture a wolf or not. Many factors were considered when prioritizing field efforts across the state. Not all packs needed to have radio collars, while others should have had one or more collars. Regardless, radio telemetry has been the standard technique with other protocols developed and validated based on a sample of collared packs. Project staff spent much of their time throughout the year conducting ground-based trapping operations and helicopter darting in winter. Reliable information about specific packs and the overall statewide population was essential to implement the approved state plan and adhere to the federal regulations.

If a pack was trapped and a radio collar is deployed, MFWP flew 1 to 2 times per month to locate the collared animal. In addition, wolves were ground tracked to determine where they localized throughout the year and the number of wolves traveling together. Den sites and rendezvous sites were visited to determine if reproduction had taken place. Additional information may be collected, such as ungulates killed, identification of private lands used by wolves, identification of public land grazing allotments where conflicts could occur, or common travel patterns.

At the end of the year, MFWP compiled information gathered through field surveys, telemetry, and public reporting. This results in a greater understanding of wolf pack distribution, individual pack sizes, pelage colors, mortality, pup production, home range sizes and patterns of use within the territory, dispersal events, and disease. The information also guided decision-making when livestock depredations were confirmed. MFWP also gained insight into the large area wolves inhabit, the dynamics of pack size, and territory shifts within and between years.



MFWP estimated the number of individual wolves (adults and pups of the year) in each pack having a radio-collared member. Reliable estimates were made for packs without collars, based on public and other agency reports. The number of wolves in radio-collared packs was added to the number of wolves in verified, uncollared packs, resulting in the minimum statewide population total. If lone dispersing animals were accounted for reliably, they are also included.

Through its monitoring program, MFWP was required to also tally and report the number of “breeding pairs” according to the federal recovery definition of “an adult male and a female wolf that have produced at least 2 pups that survived until December 31.” Montana is required to maintain at least 10 breeding pairs as an absolute minimum. Packs of 2 or more wolves that met the recovery definition are considered “breeding pairs” and noted as such in the summary tables. Not all packs in Montana satisfy the breeding pair criteria. This can be caused by the loss of 1 or both adults because of mortality or dispersal, lack of denning activity, or the loss of pups to the extent the surviving litter consists of less than 2 pups.

The total number of packs was determined by counting the number of packs with 2 or more individual animals that existed on the Montana landscape on December 31. If a pack was removed because of livestock conflicts or otherwise did not exist at the end of the calendar year (e.g. disease, natural/illegal mortality or dispersal), it was not included in the year-end total or displayed on the Montana wolf pack distribution map for that calendar year.

Such comprehensive information allowed Montana to document the maintenance of its share of the recovered NRM tri-state population and that the Montana population was secure in 2005. The Montana wolf population was more intensively monitored on a consistent, year-round basis than any other wildlife species in the state.

In 2007, a total of 18 packs straddled a border between Montana and a different administrative jurisdiction (e.g. the State of Idaho or Canada). In western Montana, a total of 12 packs straddled the Montana / Idaho state line and were tallied in the Montana minimum estimates. Nine of those 12 were in the Bitterroot (Montana portion of the Central Idaho Experimental Area) and 2 were in the lower Clark Fork (Montana portion of the Northwest Montana Endangered Area). An additional 4 also straddled the Montana / Idaho state line, but were tallied in the Idaho population estimate (2 each in the Central Idaho Experimental Area and the Northwest Montana Endangered Area, respectively). Two additional packs straddled the Montana / Canada border but they were not included in the Montana estimate.

NRM wolf program cooperators have agreed that packs will be tallied in the population in the administrative area where the den site was located. If the den site was not known with certainty, amount of time, percent of territory, or the number of wolf reports were the next criteria considered for determining pack residency. One of the project partners generally had the lead for wolf monitoring, but the information was shared equally. This assures that all packs were accounted for, but none were double-counted in population estimates. Transboundary packs were included in Tables 1, 2, 3, and 4 for the administrative region in which the animals were counted.

## Montana Statewide Wolf Population and Distribution

The Montana wolf population is secure above the 10 Breeding Pair minimum. Wolves and wolf packs themselves, however, are very dynamic on the Montana landscape. Some packs do not persist from year to year for a variety of reasons. The loss of packs in the Montana population could be due to a variety of factors, including mortalities and poor pup production / survival due to parasites and disease, and lethal control to address conflicts with livestock. In some cases, some packs that were either verified or suspected in 2006 no longer existed by the end of 2007.

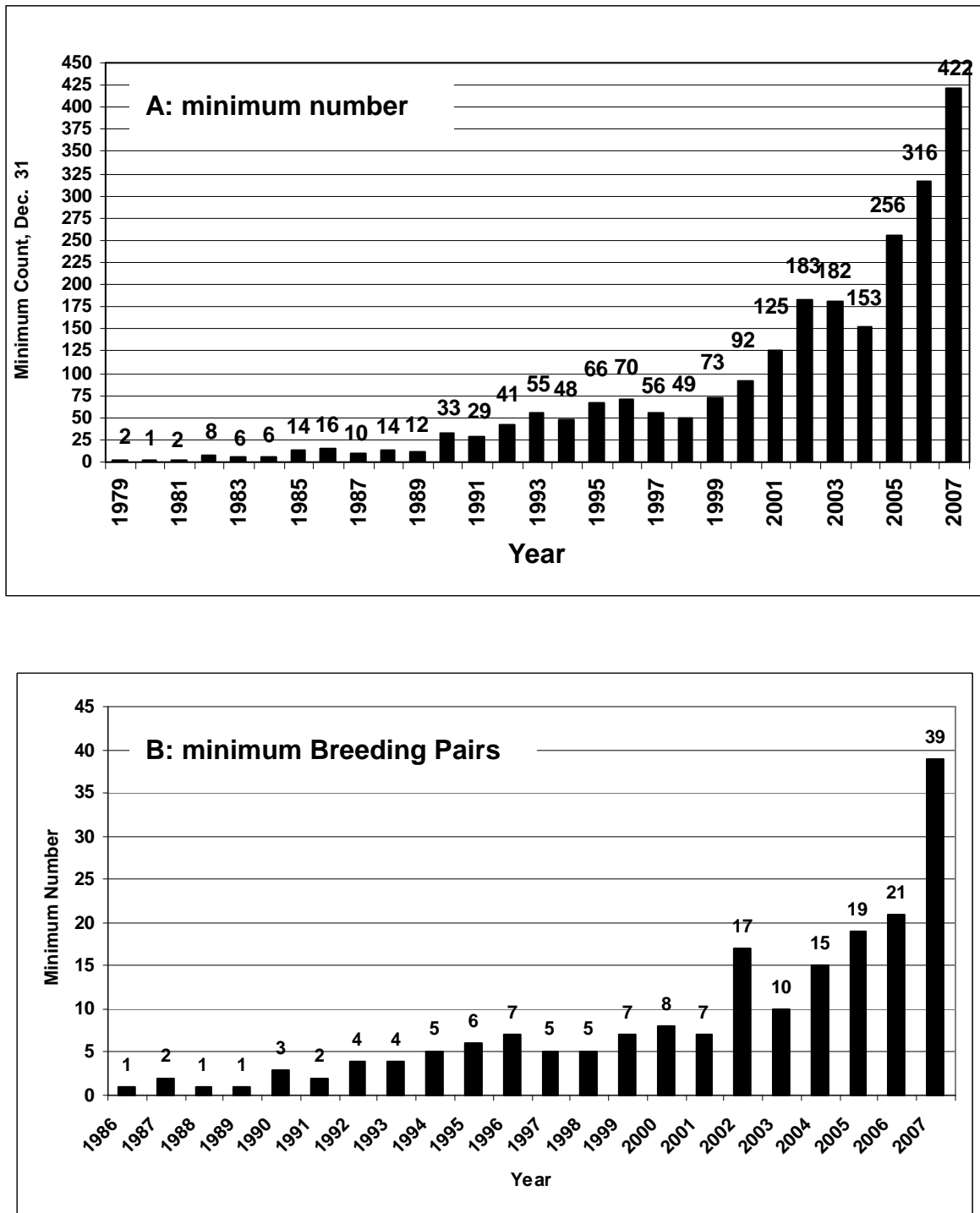
A total of 19 new packs formed between 2006 and 2007. However, 6-8 packs that existed in January 2007 no longer existed by the end of the calendar for a variety of reasons. Mange has been a factor in the Montana portion of the GYA, most notably in the Paradise Valley and eastward towards Big Timber.

The Montana minimum wolf population estimate increased about 34% from 316 wolves in 2006 to 422 in 2007 (minimum increase of 106 wolves) (Figure 3A). The number of Breeding Pairs (by the federal recovery definition) in Montana at the end of 2007 was 39 (Figure 3B). The number of packs statewide (2 or more wolves) increased from 46 in 2005 to 60 in 2006 to 73 in 2007. Packs for which size was known with confidence at the end of the year averaged 5.7 wolves (range 2-15). The larger packs tended to live in remote backcountry areas, wilderness, or Glacier National Park.

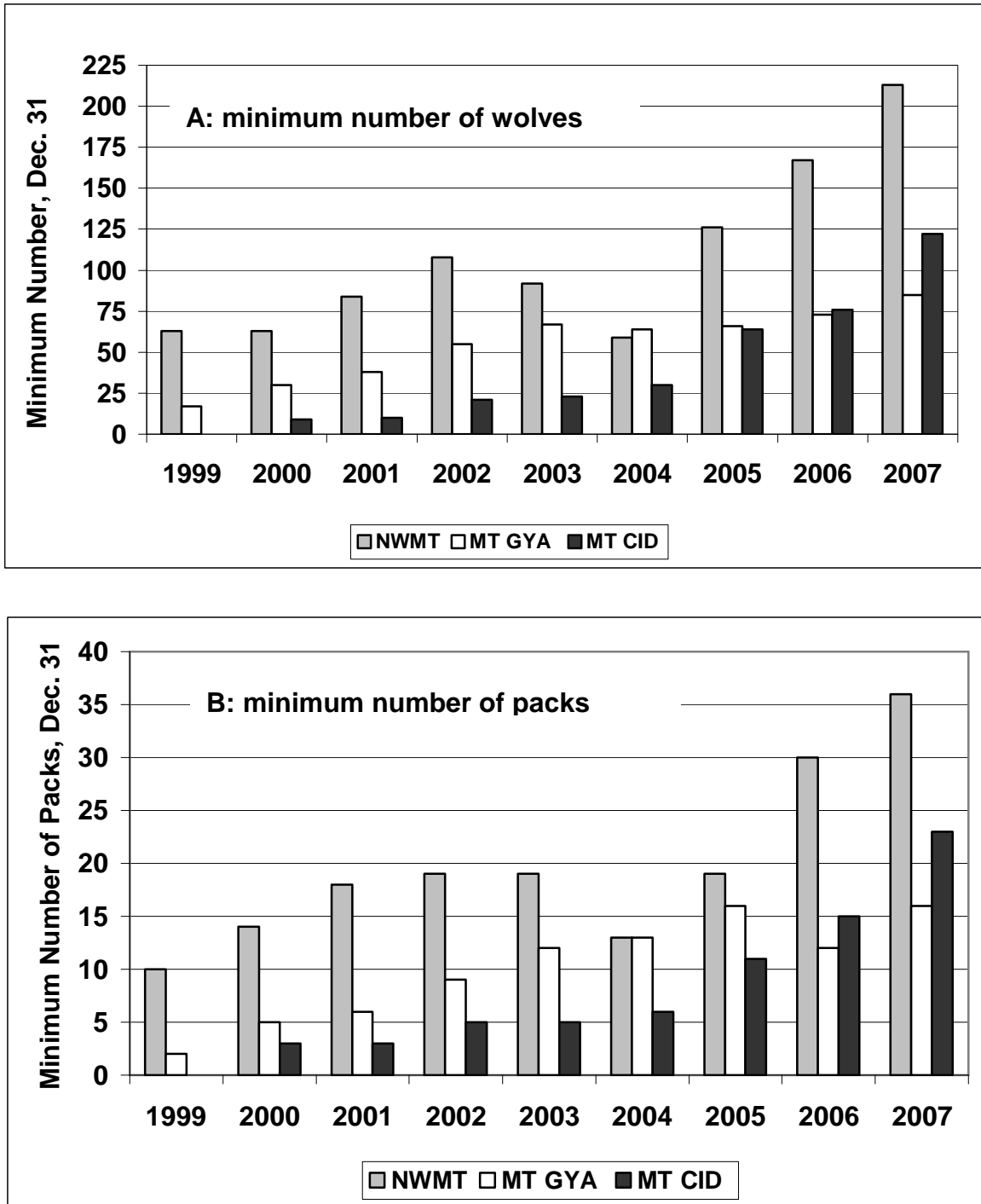
The vast majority of the total statewide increase of 106 wolves (or 19 packs of 2 or more wolves) occurred in far western Montana. The increase appeared to be influenced by the geographic proximity of the ID wolf population, a much larger “source” population than YNP. Approximately 87% of the increase in the minimum number of wolves occurred in the NWMT federal recovery area and the Montana portion of CID combined (46 wolves in each area, respectively). However, a greater percentage increase occurred in the Montana portion of the CID (south of Lolo Pass and west of I-15). See Figures 4(A) and 4(B).

In NWMT, the minimum estimate increased from 167 wolves at the end of 2006 to 213 at the end of 2007 (increase of about 28%). Overall wolf distribution in NWMT expanded with the increase in the number of packs. Twenty three of 36 packs met the Breeding Pair criteria. The minimum number of verified packs in NWMT increased from 19 in 2005 to 31 in 2006 to 36 in 2007. Several new packs started from dispersal from within the NWMT area over the last 1-3 years.

In the experimental area across southern Montana at the end of 2007, there were 37 packs, 16 of which met the Breeding Pair criteria. In the Montana portion of the GYA, there was an estimated minimum of 87 wolves in 14 packs, and 7 of the packs met the Breeding Pair criteria. In MTGYA, the population increased by a minimum of 12 wolves (16%) from 2006 to 2007. Seven of the 12 wolves added to the minimum estimate were lone individuals and did not appear to be affiliated with a pack. In the Montana portion of CID at the end of 2007, there was an estimated minimum of 122 wolves in 23 packs, and 9 of the packs met the Breeding Pair criteria. This represents a 61% increase from 2006 to 2007 (76 to 122 wolves, respectively).



**Figure 3.** Minimum estimated number of wolves in the State of Montana on December 31, 1979-2007 (A) and (B) minimum estimated number of Breeding Pairs in the State of Montana December 31, 1979 – 2007



**Figure 4.** Number trends in the number of wolves (A) and (B) the number of wolf packs (defined as 2 or more wolves traveling together on Dec. 31) in each of the three geographic sub-units of the Montana wolf population: Montana portion of the Northwest Montana Recovery Area (NWMT; endangered), Montana portion of the Greater Yellowstone Recovery (GYA; experimental), and the Montana portion of the Central Idaho Recovery Area (MT CID; experimental), 1999-2007.

Of notable interest for the southern Montana experimental areas was that wolf pack distribution expanded primarily within the area of western Montana s already expected to have wolves (Figure 5). The minimum number of verified packs in the southern Montana experimental area increased from 27 packs in both 2005 and 2006 to 39 packs in 2007.

The number of wolf packs in the Montana portion of CID increased by from 2005 to 2006 and again in 2007 (11, 15, 23, respectively). In contrast, the Montana portion of the GYA decreased by 3 packs from 2005 to 2006, but increased by 4 packs to 14 between 2006 and 2007. These differences are probably due to more numerous successful wolf dispersal events into Montana from Idaho than from the YNP over the last few years. Whereas the wolf population in YNP will always be secure and a source of dispersing wolves into Montana, the YNP wolf population is smaller and nearly all available space within park boundaries has been claimed by a pack. This is in contrast to the larger ID population that continues to increase in both number and geographic distribution in an easterly direction from the original reintroduction sites. Thus the western Montana and the Idaho wolf populations appearing to be merging as new packs form in formerly unoccupied habitats.

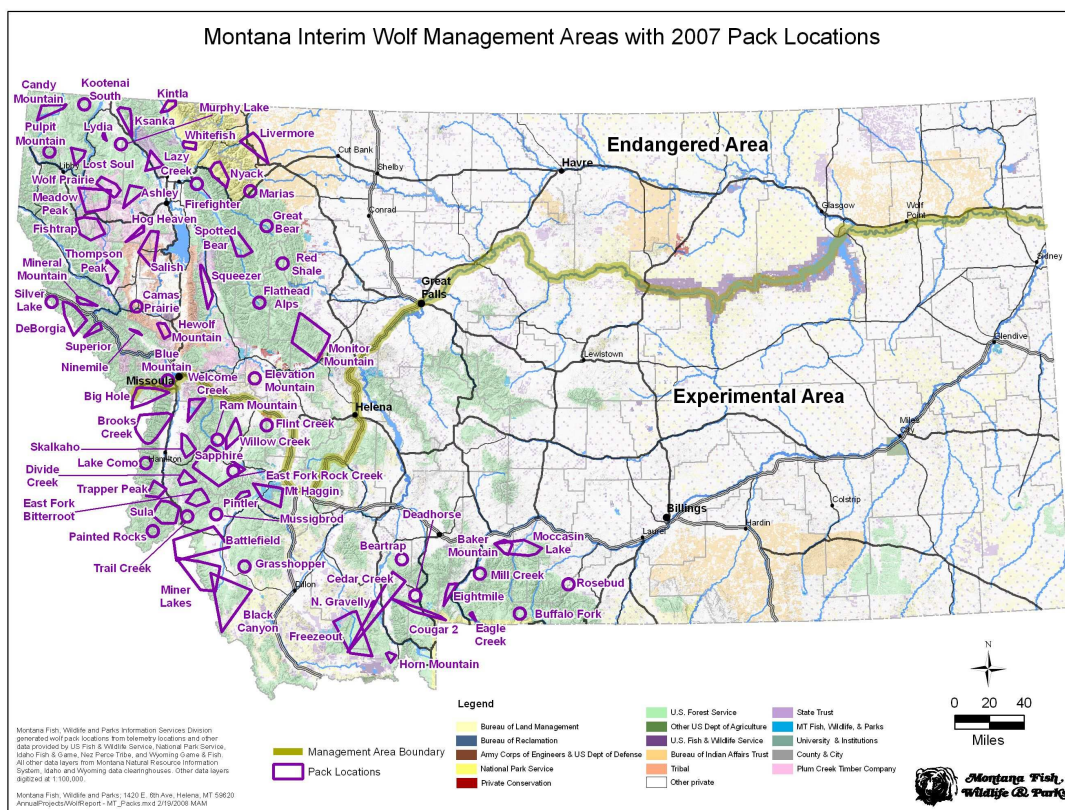
The statewide increase from 2006 to 2007 was due to a variety of factors. Some was attributed to a real increase in wolf numbers in 2007, since many new packs formed and produced pups in 2007. MFWP has been documenting dispersal events within Montana's state borders that result in new pairs / packs forming. A total of 19 new packs were verified in 2007; however, some packs that existed on January 1, 2007 did not make it through the year for a variety of reasons, including human-caused mortality and/or disease. Other 2006 packs did not exist at the end of 2007. By the end of 2007, the dynamic nature of wolf packs was such that the number of packs increased by a net total of 19 from 2006 to 2007.

It is also important to note that MFWP's increased efforts to monitor wolves in recent years compared to previous years could partially explain the increases. MFWP re-hired two seasonal conservation technicians and brought on additional volunteers to help with 2007 monitoring efforts. The volunteers contributed about 3000 hours (almost 1.5 FTE) to conduct field surveys to investigate public and agency wolf reports and to trapping operations between May and November. Seasonal technician and volunteer efforts were in addition to volunteers and full time agency personnel.

MFWP's field staff monitored the population year round, using a variety of techniques. In addition, MFWP made a concerted effort to gather wolf reports from the public and other agency professionals. Two or three of the "new" packs verified in 2007 were noted as suspected packs at the end of the year in 2006, but were not confirmed and included in the 2006 population estimate.

In conclusion, the Montana wolf population is split roughly equally between the northern Montana endangered area (NWMT 213 wolves) and the southern Montana experimental area (209 wolves). Packs are also roughly distributed equally between northern and southern Montana (Figure 5).

Several dispersal events were documented in 2007 and described in the Overview sections of the Interim Management Areas below. Of particular note is the southward dispersal of a male wolf wearing a global positioning satellite collar. It left the pack within which it was marked northwest of Lethbridge, Alberta Canada and traveled southwest and is in Idaho near the town of Clarkia (about 260 airline miles away from his natal pack). MFWP personnel were in close communication with a colleague in Pincher Creek Alberta through the period. The wolf was also observed and reported to MFWP by some spring black bear hunters in the Lower Clark Fork River area. Several collared wolves went “missing.” These animals either experienced collar failure, were killed and the collar disabled or destroyed, or dispersed from their pack and could turn up elsewhere.



**Figure 5.** Verified wolf pack distribution in the State of Montana, as of December 31, 2007.

### Development of a Public Wolf Hunting / Trapping Season

The U.S. Fish and Wildlife Service (USFWS) is expected to delist gray wolves from the Endangered Species Act in early 2008. Regulated public harvest was first endorsed by the Governor’s Wolf Advisory Council in 2000 and eventually included in Montana’s wolf conservation and management plan. The 2001 Legislature passed SB 163, reclassifying the wolf as a species in need of management upon federal and state delisting (MCA 87-5-131). The 2007

Legislature created a wolf license (SB 372). Other statutes within MCA enable the FWP Commission to adopt rules and general regulations and specific regulations pertaining to wolf hunting and trapping as a species in need of management.

FWP first began exploring the idea of how to design public hunting and trapping for wolves early in 2007. Ultimately, FWP crafted a proposed season and presented it to the FWP Commission at their meeting in December, 2007. Hunting could only be implemented when wolves are successfully delisted and if there are more than 15 Breeding Pairs of wolves in Montana. Despite awkward appearances, FWP wanted to move forward with the proposal so that adequate time could be devoted to the technical work as well as public comment. In adopting a tentative wolf season proposal in December 2007, the Commission enabled FWP to gather public comment, beginning in January 2008. Final decisions would be made in early 2008.

FWP recommended that wolf hunting and trapping seasons be established in two steps. First, the basic components, such as season dates, management units, means of take etc. would be determined through the regular biennial season setting timeline and process. These are the rules and regulations that outline what's legal and what is not with respect to licensed public harvest as well as other regulations pertaining to gray wolves classified as a species in need of management under Montana Code Annotated. Hunting / trapping season frameworks are adopted in Montana on a two year (biennial) cycle, with the process beginning with presentation of tentative proposals in December every other odd numbered year. The public has an opportunity to comment during the month of January. FWP reviews public comment and may modify the proposal prior to making a final recommendation to the Commission at the first meeting in February of next calendar year. The Commission would then make a final decision, thereby creating rules and regulations for the next two years.

The second step is to determine the actual number of wolves that could be harvested. This is addressed in a separate decision process. FWP is recommending that total wolf harvest be finite and regulated through a quota system. Within that quota system, general licenses would be available for hunting with limited special permits for trapping. The actual quota would be determined through the regular annual quota-setting process at future FWP Commission meetings. At a later time and depending on delisting progress, FWP would recommend tentative quotas and would gather public comment. The FWP Commission would then adopt final quotas in the late summer of each calendar year. Quotas are set on an annual basis.

Incorporating public hunting and trapping into the overall wolf management program will enable the Department to more fully incorporate wolves into Montana's wildlife heritage by enabling sportsmen and women to participate in wolf conservation and management similar to other wildlife species. This will help develop an additional constituency to advocate for its conservation, as has been the case for mountain lions. Wolves would be managed more proactively and in conjunction with natural prey populations and other carnivores in a more ecological manner.



## **Wolf Health Monitoring and Disease Surveillance**

MFWP's Wildlife Research Laboratory (Lab) in Bozeman played an important role in Montana's wolf monitoring program. In 2005, MFWP's wildlife veterinarian drafted a biomedical protocol that guides all wolf capture, physical or chemical immobilization procedures, and animal care and handling procedures. Supplementary training was provided in 2006, and routine consultation assured adherence to the protocol. Additionally, lab personnel carried out routine wolf health and disease surveillance by collecting information from both live and dead wolves submitted in 2007.

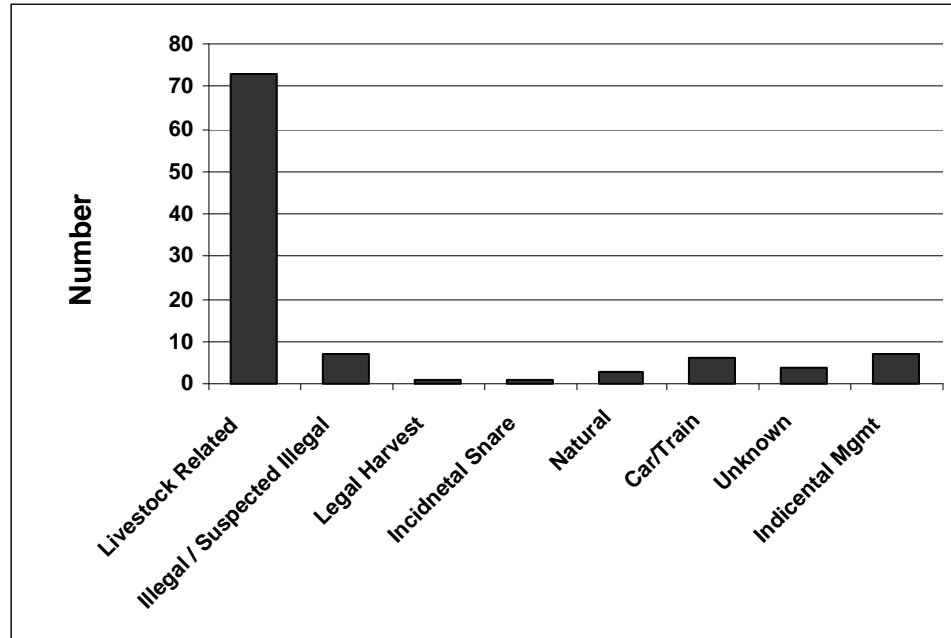
Blood samples collected by MFWP and WS from live-captured wolves were sent to the Lab. Blood was screened for exposure to various diseases, and some was archived in a DNA repository. Usable samples were forwarded for hematology, biochemistry, and serology screening. All of the hematology and biochemistry results were within normal limits expected for wolves. However, serology results indicated that most of those individuals had been exposed to some common canid viral and bacterial diseases: canine parvovirus, canine distemper, canine adenovirus, and leptospirosis. The presence of these antibodies in blood collected from live wolves indicated exposure at some time in the animal's life, but that it survived the exposure. While there has been much speculation about the cause of low pup counts in southwest Montana and inside YNP in recent years, clinical evidence to confirm the cause/s was very difficult to obtain. The 2006 Montana Wolf Conservation and Management Annual Report (Sime et al. 2007) provided an in-depth summary of results to date regarding diseases in Montana wolves.

For the last two years, MFWP has been cooperating in a University of Illinois study examining contaminants and toxins in western gray wolf kidneys. Samples are also being submitted from the Canadian provinces. In 2007, MFWP obtained additional useable kidney samples from Montana wolves. Mid-year, MFWP personnel assisted in shipping and transferring kidney samples obtained in the Canadian provinces and from Montana to the University for analysis. Results are not yet available.

Additionally, MFWP developed a protocol that called for all dead wolves found in Montana to be submitted to the lab for necropsy examination. Unless special instructions were provided, a standard basic procedure was followed. Typical information collected includes cause of death, body weight, evidence of ectoparasites, etc. Various biological data were also collected. The first premolar, the skull, and a tissue sample were collected and stored. Salvageable hides were retained and processed for educational purposes. The veterinarian had discretion to complete a more in-depth necropsy if preliminary findings warranted additional examination. Abnormal or suspect tissues were submitted to the Montana State Diagnostic Laboratory (or occasionally elsewhere) for further evaluation. Lab personnel may also assist and consult during USFWS law enforcement investigations to determine cause of death and examine physical evidence. The 2006 Montana Wolf Conservation and Management Annual Report (Sime et al. 2007) provided an in-depth summary of results to date for the years 2003 to 2006.

Causes of documented wolf mortality in 2007 are shown in Figure 6. The majority of wolf mortality overall in Montana is related to humans: livestock conflicts, car strikes, train strikes, illegal killing, legal harvest in Canada, and incidental to other activities (e.g. trapping/snaring).

Of the 102 documented mortalities, 72% (n=73 wolves) were killed to address livestock related conflicts. The remaining 28% (n=29 wolves) died due illegal / suspected illegal killing, legal harvest in Canada, incidental trapping/snaring, natural, unknown, car/train, and incidental to management or euthanasia for poor health.



**Figure 6.** Causes of documented gray wolf mortality in Montana in 2007.

### **Wolf – Ungulate Relationships**

In mountainous areas with harsh winter weather conditions, less productive vegetation, and multiple predator species including grizzly bears, wolf predation seemed to be more influential than in areas where livestock were present seasonally or year round. Outside national parks, Montana's wolves routinely encountered livestock. Lethal wolf control to resolve wolf-livestock conflicts seemed to decrease local wolf densities to a point where wolf predation did not appear to significantly affect elk populations. See MFWP 2006 Monitoring and Assessment Report at <http://fwp.mt.gov/wildthings/wolf/game.html>.

Montana elk herds that inhabit YNP seasonally have declined, due in part to predation where local wolf densities (among other predator species) were high. In a few areas, MFWP curtailed hunter opportunity beginning in 2004. Yet in other areas where wolves and elk interact, elk numbers are stable or increasing. Two thirds of the hunting districts in southwest Montana (all of which support wolves) are currently offering the most liberal hunting opportunities seen in nearly 30 years as a management response to higher elk populations.

Research has shown that elk use habitat differently since wolves have returned. One study showed that when wolves were in the local area, elk spent less time in open areas and more time in forested areas. This seems to have affected individual hunters on individual days. Another study showed that elk are not locally “displaced” or shift habitat use when wolves are in an area. Different vegetation patterns may explain why results differed. Hunters may need to adjust their strategies. MFWP biologists now consider wolf activity among the many factors potentially affecting big game populations and hunter success.

In addition, MFWP is actively involved in various research projects that are investigating predator-prey relations, population dynamics of black bears and mountain lions, large carnivore monitoring techniques, and wildlife diseases. See Hamlin (2006) on the MFWP website wolf pages under “Wolves – Big Game” for additional information on what MFWP has learned so far. See also the main Northern Rockies bibliography included in this report.

### **Wolf – Livestock Interactions in Montana: General Overview**

Montana wolves routinely encounter livestock on both public grazing allotments and private land. Wolves are opportunistic predators, most often seeking wild prey. However, some wolves “learn” to prey on livestock and teach this behavior to other wolves. Wolf depredations are very difficult to predict in space and time. Between 1987 and 2007, the vast majority of cattle and sheep wolf depredation incidents confirmed by WS occurred on private lands. The likelihood of detecting injured or dead livestock is probably higher on private lands where there was greater human presence than on remote public land grazing allotments. The magnitude of under-detection of loss on public allotments was not known. Nonetheless, most cattle depredations occurred in the spring or fall months while sheep depredations occurred more sporadically throughout the year.

Historically, WS investigated reports of injured or dead livestock or domestic dogs in Montana. Between October 1, 1996 and September 30 2006, WS received approximately 679 complaints of suspected wolf damage. The total number of complaints received on a federal fiscal year basis gradually increased over the last 10 years, but leveled out at around 96 in the last 3 years. In federal fiscal year 2007, however, the number of wolf complaints received by WS increased to 159 from 97 in federal fiscal year 2006. Figure 7 shows the number of complaints received and that about half of all complaints that are verified as wolf.

On average between 1987 and 2006, about 50% of the complaints received were confirmed as wolf damage (injured or dead livestock or domestic animals). About 75% of confirmed injured or dead cattle involved calves (n=213). Of all confirmed injured or dead sheep, ewes comprised about 34% (n=147), lambs accounted for 26% (n=114), and 8% (n=35) were bucks. The remainder was of unknown classification.

The rest were “not confirmed” or “probable” wolf-related (i.e. injuries or death which could be due to a different predator species, poisonous plants, lightning, disease, etc). In a 2005 survey conducted by the National Agricultural Statistics Service, Montana cattle producers reported they lost a total of 66,000 cattle and calves to all causes, 3,000 of which were due to predators (4.5%

of total losses). Coyotes were responsible for 54% of calves lost to predation in 2005 (1300 of 2400 total). The remaining 1,100 calves were killed by all other Montana predator species combined, including an unknown number by wolves.

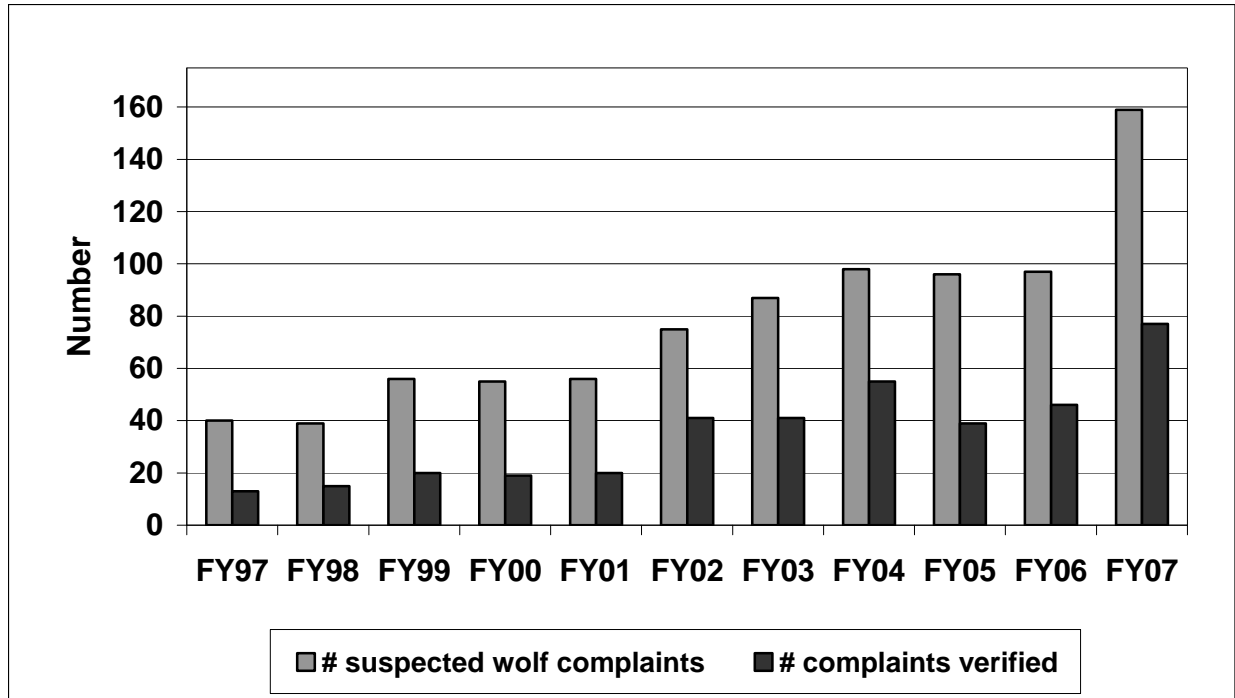
In a 2006 survey, Montana sheep producers reported losing a total of 51,000 sheep (ewes and lambs combined) to all causes, of which 14,100 sheep were killed by predators (28% of total sheep losses). In 2005, coyote predation accounted for 72% of all predator losses (n=10,100) and 20% of all death losses. Wolf predation accounted for 1.4% of total reported predator losses (n=200) (National Agricultural Statistics Service 2007).

However, a restored wolf population in Montana represents a new source of livestock mortality, and it may in fact be significant for some individual livestock producers (see below). Wolf presence may also lead to indirect losses because of missing livestock or poor livestock performance. In the cases that were either classified as a “confirmed” or a “probable” wolf depredation, MFWP had to decide how to address the problem with WS’s help and coordination with the livestock producer.

Most wolves in Montana routinely encounter livestock, but do not kill livestock at each encounter. On average through the last 10 years, 10-25% of Montana wolf packs were confirmed to have preyed on livestock in any given year. One pack has been on the landscape for 18 years and was confirmed to have killed livestock a total of 3 times even though livestock occurred within its territory and within 2 miles of the den site. Other packs depredate once or twice a year, every other year, or at more widely spaced intervals. Still others depredate more frequently, some demonstrating an escalating behavior pattern of actively hunting livestock in the span of a few weeks or months. Packs that have killed livestock repeatedly and within short periods of time, particularly adult-sized livestock, eventually became sources of chronic conflict. In these situations, lethal control occurred more regularly within and across years. In some cases, incremental removal in a stepwise fashion after repeated losses resulted in full pack removal.

From 1987 – 2006, WS confirmed a total of 314 incidents of injured or dead livestock due to wolves, affecting 162 different livestock owners. Of all the affected livestock owners, more experienced a single incident of confirmed wolf damage (n=101 of 162; 63%) than experienced multiple incidents (n=61 of 162; 39%) (Figure 8). Most confirmed incidents of injured or dead livestock in Montana (n=213 of 314; 68%) involved livestock producers who experienced wolf damage 2 or more times. The greatest number of incidents experienced by a single livestock owner in Montana was 16. Two owners experienced 11 incidents, and two others experienced 7 incidents (Figure 9).

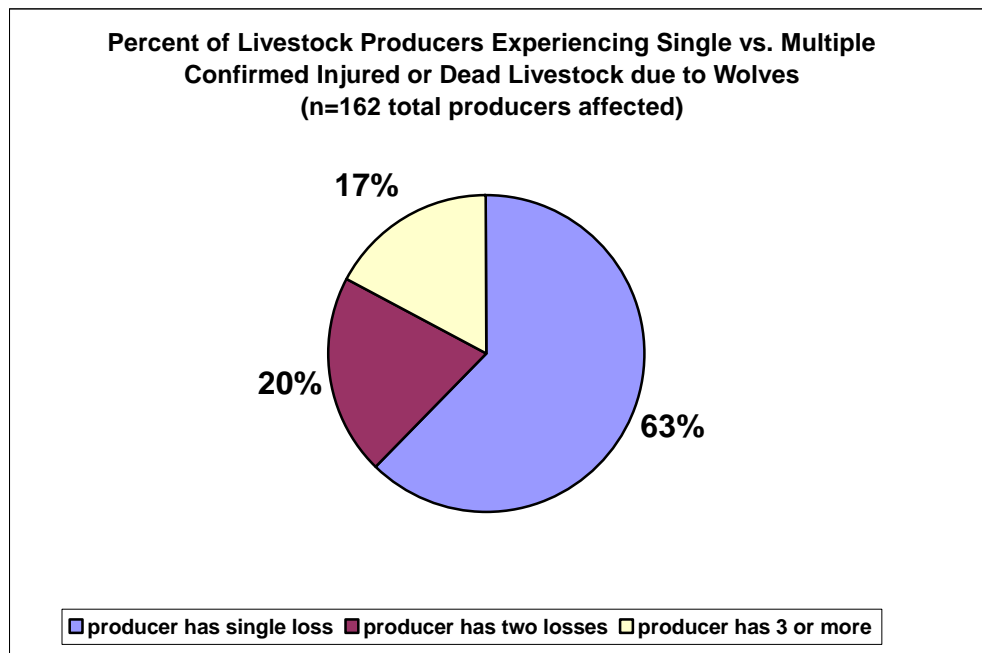
Our data demonstrated how variable wolf-livestock conflicts in Montana are within and among years. At a coarse spatial scale, our data suggested that most conflicts occurred on private land and that some areas are more prone to conflict than others, evidenced by the multiplicity of events experienced by some producers. Still, a majority of affected Montana producers experienced a single incident of confirmed wolf damage (62%). Thus it is difficult to predict exactly when and where wolves will attack livestock within an individual pack territory.



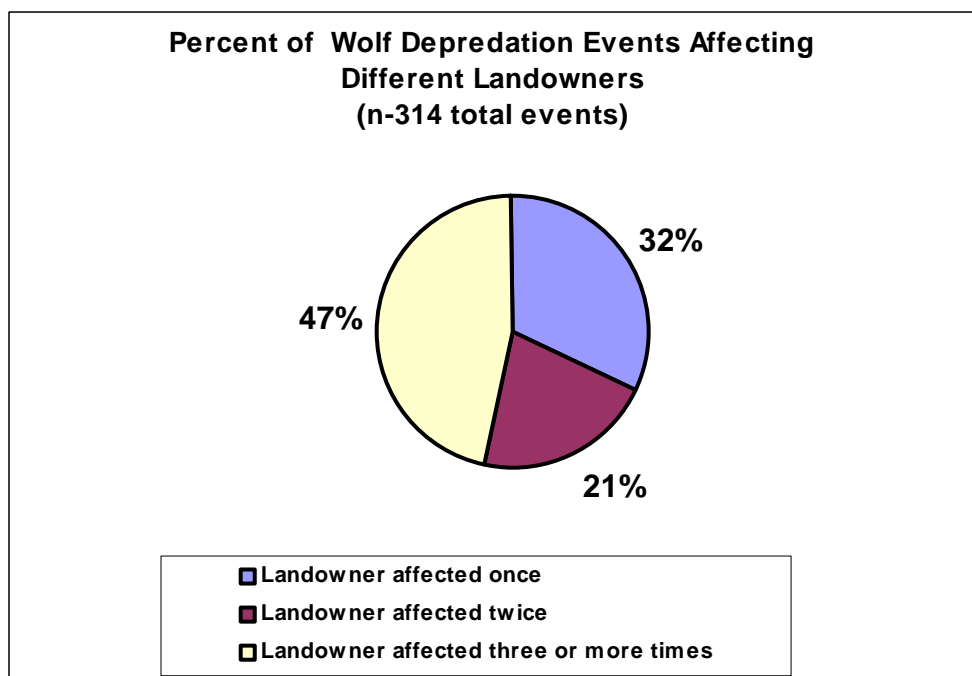
**Figure 7.** Number of complaints received by USDA Wildlife Services as suspected wolf damage and the percent of complaints verified as wolf damage, federal fiscal years 1992 – 2007. Federal fiscal years from October 1 to September 30.

Occasionally, livestock were confirmed killed by lone dispersing wolves or a pair of wolves passing through, as evidenced by the lack of a resident pack or subsequent instances of injured or dead livestock or wolf sign in the area. In these situations, the wolf usually does not return to the original depredation site. In other instances, livestock are killed by remnants of packs that became fragmented due to lethal control, dispersal or disease-related mortality.

A total of 254 wolves were killed to help resolve conflicts with livestock from 1987-2007 (Figure 10). Despite this level of lethal removal, particularly in the early years, the Montana population still increased in number and distribution, due primarily to immigration from central Idaho and to growth from within the Montana population. YNP is always a source of wolves dispersing into Montana; however, the MT portion of the GYA recovery area population has been relatively stable or slightly increasing / decreasing for the last few years. From 2001-2007, an average of 13.5% of the wolf population per year was killed due to conflicts with livestock (Figure 11). Despite this level of removal due to livestock conflicts, the Montana wolf population continued to increase through the years.



**Figure 8.** Percent of Montana livestock producers experiencing a single vs. multiple confirmed injured or dead livestock due to wolves, 1987-2006.



**Figure 9.** Percent of wolf depredation events of confirmed injured or dead livestock affecting different landowners in Montana, 1987-2006.

Under the more flexible special federal regulations in the southern Montana experimental area, a total of 10 wolves were legally killed by private citizens when discovered in the act of chasing or attacking livestock and 13 wolves were killed under shoot-on-sight permits from 2001-2006. In 2007, 7 wolves were killed while actively chasing livestock and 4 wolves were killed on a special permit. One of the 10j shootings and 1 of the wolves killed under a permit were later found to be in violation of the federal regulations and citations were issued. Those mortalities are still tallied with the others. WS and MFWP received numerous other reports of non-injurious hazing and harassing, but records are not complete enough to report accurately.

Because wolves are still listed under ESA, wolf-livestock conflicts were addressed using a combination of the approved state plan and federal regulations. Among other things, MFWP considered the number of breeding pairs statewide and in the respective interim management areas (endangered area or experimental area), where the incident occurred, potential for additional losses, and a pack's previous history with livestock when deciding what to do. MFWP and WS tried to connect the management response and the damage closely in space and time, targeting the offending animal/s. WS personnel carried out the lethal control work. MFWP strove to assure the security of the overall wolf population, while addressing depredation losses and control in an incremental fashion responsively and as directed by the state plan.

Because most confirmed incidents of injured or dead livestock in Montana involve livestock producers who were affected 2 or more times and that most incidents occurred on private lands, we believe the combination of proactive non-lethal deterrents combined with strategic incremental lethal control of problem wolves is the best way to resolve wolf-livestock conflicts.

Both MFWP and WS also provided advice and technical information to individual livestock producers about proactive strategies that may decrease their risk of wolf depredations. Project personnel also worked collaboratively with interested private organizations and local-level community groups (e.g. watershed groups) to provide technical advice and to investigate non-lethal methods of deterring livestock conflicts.

Non-lethal deterrents were explored and implemented proactively to decrease the risk of wolf depredations and were considered after confirmed and probable wolf-caused losses. Several different range rider projects were implemented. MFWP also deployed fladry and electrified fladry on private property in several locations in 2007. MFWP personnel collaborated with other wolf managers from around the world to discuss new ways to address conflicts and to exchange "experiences." MFWP and WS staff worked closely to share information throughout the year. This collaboration allowed for timely and well thought out decisions with respect to the application of both non-lethal and lethal tools when conflicts occurred. Fladry, electric night pens, increased human presence, and non-injurious hazing or harassment were all implemented by both private citizens and agency personnel.

While wolves remain listed under ESA, there are two different classifications and legal frameworks for addressing wolf-livestock conflicts (Figure 2). Wolves across northern Montana are classified as endangered, which offered both livestock producers and MFWP less flexibility. The 1999 Interim Control Plan ultimately guided decisions about lethal control. Citizens cannot harass or kill wolves on private lands, state leases, or federal lands. State and federal agency personnel were responsible for all harassment activity and lethal control of all wolves in the endangered area.

Wolves across southern Montana are classified as experimental, nonessential. Because Montana has a federally-approved management plan, additional flexibility became available to both MFWP and livestock producers in February 2005. Known as the 10(j) regulations, members of the public in the experimental area had the ability to non-injuriouly harass wolves that were too close to livestock any time. If wolves were seen actively chasing or attacking livestock on private or federally permitted lands during the active permit, livestock owners, their immediate family members or employees could legally take the wolf. Physical evidence that demonstrated that an attack was imminent was required. All cases of harassment or lethal take had to be reported to MFWP within 24 hours. The 10(j) regulation was patterned after the Montana “defense of property” statutes that will take effect upon delisting allowing take “in the act” of attacking domestic livestock. In 2005, 7 wolves were killed by private citizens under the 10(j) rule compared to 2 in 2006. In 2007, a total of 7 wolves were killed under the 10j regulation.

### **Depredation Incidents in 2007**

The majority of wolf-livestock interactions took place in the experimental area across southern Montana. Livestock densities (number of cattle and sheep per square mile) in south central Montana counties are some of the highest of any in Montana. Habitat, ungulate distribution, and landscape features placed wolves and livestock in closer proximity in space and time than other parts of the state.

WS confirmed that, statewide, 75 cattle, 27 sheep, 3 domestic dogs and 1 llama were killed by wolves in calendar year 2007 (Figure 10). Approximately 32% of Montana packs had confirmed livestock kills at some point in 2007. Additional investigations were determined to be probable wolf depredations or confirmed injured livestock. Furthermore, some livestock producers reported “missing” livestock and suspected wolf predation. Other reported indirect losses include poor weight gain and aborted pregnancies. There is no doubt that there are undocumented losses. It is difficult to quantify direct and indirect economic losses in totality. Most depredations occurred on private property. Seventy three wolves were killed to reduce the potential for further depredations in 2007. Of the 73, 7 were killed by private citizens on private land under the 2005 10(j) regulations and 4 were killed by private citizens who had been issued a permit in the experimental area of southern Montana. The remaining 62 were killed by WS using either ground or aerial based methods. Three packs were removed entirely due to chronic livestock conflicts (Bearmouth, Fleecer Mountain, and Wedge). Another pack had been slated for complete removal but it was not completed (Hewolf).

In the endangered area across northern Montana, the number of livestock and dogs confirmed killed increased from 2006 levels, as did the number of wolves killed. WS confirmed a total of 26 cattle, 5 sheep, 3 dogs and 1 llama as having been killed by wolves in 2007. A total of 19 wolves were killed in NWMT. The increase in livestock loss and lethal wolf control was due primarily to continued and chronic depredations and removal of wolves from the Hewolf pack. Hewolf pack members first began killing livestock in 2006 and the pattern continued through much of 2007. A total of 12 wolves were removed from this area (63% of the total number of wolves killed in NWMT in 2007). Several livestock producers in the Hewolf pack territory participated in a field trial experiment of electrified fladry. None of the losses occurred within the electrified fladry pastures. A total of 6 of 36 (17%) packs had confirmed depredations. See pack narratives below.



In the Montana portion of the GYA, the number of confirmed livestock losses increased in 2007 from 2006. Incidents in 2007 occurred primarily in 3 counties where livestock conflicts have occurred in the past (Park, Madison, and Beaverhead). WS confirmed a total of 24 cattle, 17 sheep, and 13 goats. A total of 23 wolves were killed (6 of which were killed by private citizens). The increase in total livestock loss and lethal control was apparently due to an increase in the percentage of packs in the GYA that killed livestock. In 2006, 3 of 15 (20%) packs killed livestock whereas in 2007, 9 of 18 packs (50%) killed livestock. Of the 18 packs that existed at some point in 2007, only 14 existed at the end of the year due to the effects of mange, conflicts with livestock, and interactions with other wolves. Lethal control in one of the 18 packs was implemented to remove the entire pack due to chronic depredations on private land (Wedge).

In the Montana portion of the CID, the number of confirmed livestock losses increased in 2007 compared to 2006. WS confirmed a total of 25 cattle and 3 sheep lost to wolves. A total of 31 wolves were killed (5 of which were killed by private citizens when wolves were actively chasing or attacking livestock). In 2006, 6 of 17 (35%) packs killed livestock. Of the 25 packs that existed at some point in 2007, 10 (40%) killed livestock. Two packs were completely removed (Bearmouth and Fleecer Mountain) due to chronic livestock conflicts and did not exist at the end of the year.

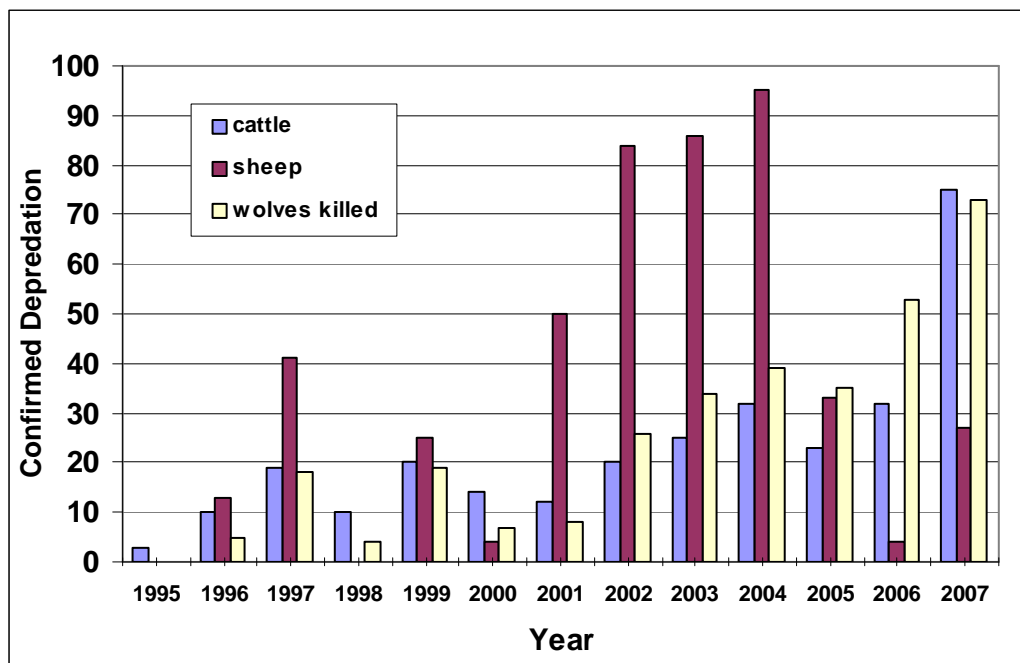
Private citizens killed 11 of the 73 (15% of total) wolves removed in the Montana portion of the GYA and CID experimental areas combined in 2007. Seven wolves were killed under the 10(j) regulations and 4 were killed by permit in 2007. All of the wolves killed in Montana by private citizens under the 10(j) regulation or as authorized by a shoot-on-sight permit were killed on private land.

Between 1987 and 2006, most confirmed cattle depredation events in Montana occurred in spring (March, April, May) when calves were small and most vulnerable. A smaller spike occurred in the fall (September and October), presumably as food demands of the pack increased and pups are traveling with the pack. In addition, wild ungulates were still well dispersed on summer range and young-of-the-year ungulates were more mobile. Most confirmed sheep depredation events in Montana occurred in July, September, and October. Because of their smaller size relative to cattle or other classes of livestock, sheep are vulnerable to wolf predation year round. Similar patterns of peak depredation activity were observed in 2007.

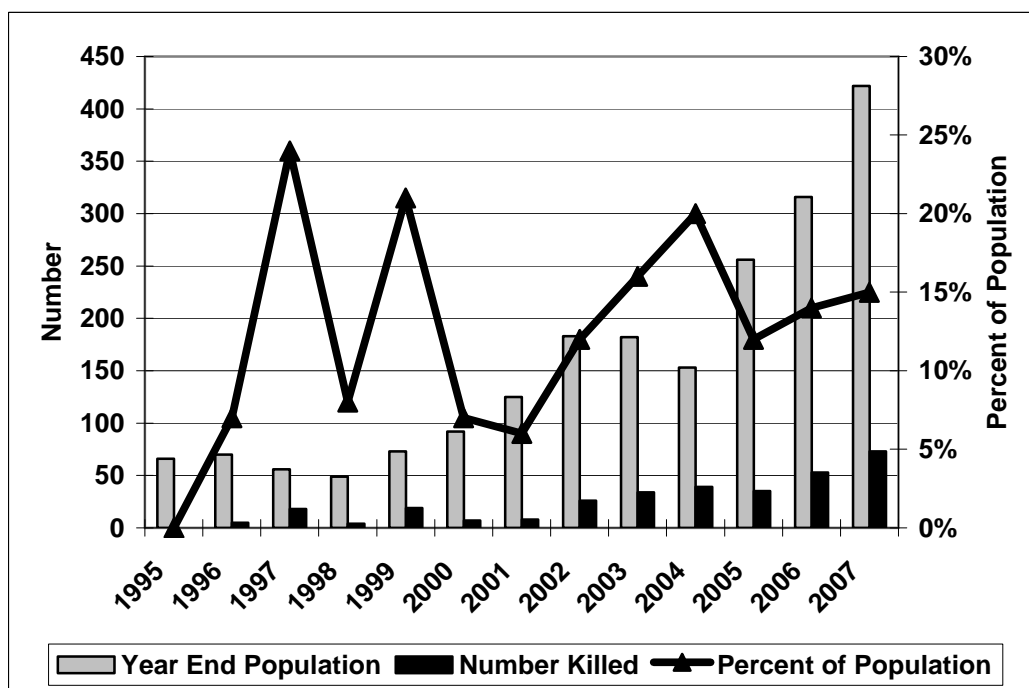
### **Defenders of Wildlife: Bailey Wildlife Foundation Wolf Compensation Trust**

(source: <http://www.defenders.org/wolfcomp.html>)

In 1987, Defenders of Wildlife (Defenders) created a \$100,000 fund to compensate livestock producers in the NRM for verified livestock losses due to wolves. The goal was to help reduce wolf-related economic losses as a result of wolf recovery. The trust expanded to \$200,000 in 1999. In the fall of 2000, the wolf and grizzly bear compensation fund and trusts were renamed the Bailey Wildlife Foundation Wolf Compensation Trust. This is the only compensation program currently available in Montana.



**Figure 10.** Confirmed cattle and sheep depredation and the number of wolves lethally controlled in the State of Montana based on investigations by USDA Wildlife Services, 1995-2007.



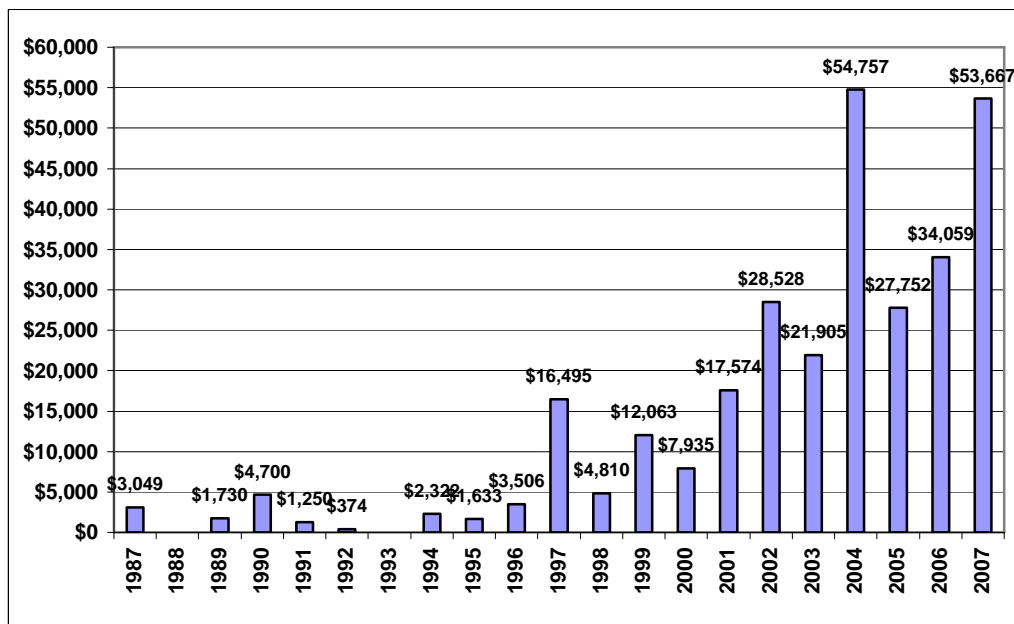
**Figure 11.** Minimum estimated wolf population, number of wolves killed to resolve livestock conflicts, and percent of the population removed, calendar years, 1995 - 2007.

The program pays for 100% of the fall market value for a WS-confirmed wolf-caused loss up to \$2000 per animal and 50% of the market value for probable losses. More recently, Defenders increased the cap per animal to \$3000 and implemented some criteria that are supposed to be met in order for a claim to be paid. Livestock losses covered include: sheep, cattle, horses, mules, goats, llamas, donkeys, pigs, chickens, geese, turkeys, herding dogs and livestock guarding dogs. Consult the website for additional information.

Defenders of Wildlife also created the Proactive Carnivore Conservation Fund to prevent conflict between imperiled predators and humans before it occurs. The fund was renamed The Bailey Wildlife Foundation Proactive Carnivore Conservation Fund in recognition for the foundation's gift. If landowners or other entities have repeated predator problems, Defenders will consider funding projects that could help reduce conflict.

If the concept is practical and within the means of the organization, Defenders will share the cost of the project. Projects can also be proposed by government agencies or producers. According to Defenders, the proactive fund has three objectives: to reduce conflicts between predators and humans, to keep predators from being killed by agencies in response to human conflicts, and to increase general tolerance for carnivores across the landscape in an effort to expand the range of predators across the American West by reducing conflict between predators and humans.

From 1987 through December 2007, Defenders of Wildlife paid a total of approximately \$298,109 in claims in the State of Montana (Figure 12). From 2000 to 2005 (inclusive), the total amount paid was \$158,451 (65% of the total paid in Montana 1987-2005), averaging about \$26,408 per year. The amount paid in any one year ranged from \$7,935 to \$54,757. Increases in total payments from 2005-2007 reflect increasing wolf numbers in Montana.



**Figure 12.** Compensation payments paid in Montana by Defenders of Wildlife, 1987 through December 2007, according to calendar year of payment and parameters set forth by Defenders of Wildlife. Source: <http://www.defenders.org/wolfcomp.html>.

## **Montana Livestock Loss Reduction and Mitigation Program: a Montana-based Reimbursement Program**

The Montana Wolf Conservation and Management Plan called for creation of a Montana-based program to address the economic impacts of verified wolf-caused livestock losses. The plan identified the need for an entity independent from MFWP to administer the program. The plan also identified that the reimbursement program would be funded through sources independent from MFWP's wolf management dollars and other MFWP funds intended for fish and wildlife management.

In keeping with Montana's tradition of broad-based citizen participation in wolf conservation and management, a diverse, 30-member working group met 4 times in 2005. The working group was comprised of private citizens, representatives from non-governmental organizations, and representatives from state and federal agencies. A smaller subcommittee continued to meet in 2006. This group finalized a framework which then became the basis for legislation in the 2007 Montana Legislature.

As a part of the comprehensive wolf program implemented by Montana Fish, Wildlife & Parks (MFWP) and its cooperators, the Montana Livestock Loss Reduction and Mitigation Program (MLLRMP) will address economic losses due to wolf predation and create incentives for producers to take proactive, preventive steps to decrease the risk of loss. The large working group agreed that both government and livestock producers want to take reasonable and cost-effective measures to reduce losses, that it is not possible to prevent all losses, and that livestock producers should not incur disproportionate impacts as a result of recovery of Montana's wolf population.

The purposes of the Montana Livestock Loss Reduction and Mitigation Program are to proactively apply prevention tools and incentives to decrease the risk of wolf-caused losses; minimize the number of livestock killed by wolves through active management of the wolf population and proactive livestock management strategies and defense of property provisions of federal regulations prior to delisting and state laws upon delisting; provide financial reimbursements to producers for losses caused by wolves based on the program criteria.

There are three basic components: a loss reduction element, a loss mitigation element, and the state wolf management plan. MFWP and USDA Wildlife Services (WS) would fulfill their responsibilities and roles outlined in the state management plan. The loss reduction and loss mitigation elements would be administered by an independent quasi-judicial board created by the Montana Legislature.

The Loss Reduction element is intended to minimize losses proactively by reducing risk of loss through prevention tools such as night pens, guarding animals, or increasing human presence with range riders and herders. Active management of the population under the approved Montana Wolf Plan (and the applicable federal regulations for now) should also help decrease the risk of loss.

The Loss Mitigation element would implement a reimbursement payment system for confirmed and probable losses that can be verified by USDA Wildlife Services. Indirect losses and costs are not directly covered, but could be addressed through application of a multiplier for confirmed losses and a system of bonus or incentive payments. Eligible livestock losses are cattle, calves, hogs, pigs, horses, mules, sheep, lambs, goats, and guarding animals. Confirmed and probable death losses would be reimbursed at 100% of fair market value. Veterinary bills for injured livestock that are confirmed due to wolves are covered at 100% of fair market value of the animal.

Of particular concern to all participants was the need to secure funding for both the proactive work and the loss reimbursement components of the Montana wolf program. The working group explored a variety of funding mechanisms. Both the Montana Wolf Advisory Council and the second working group concluded that the MLLRMP would be funded through special state or federal appropriations or private donations. Both groups agreed that MFWP's wolf management dollars, and other MFWP funds (license revenue and federal matching Pittman-Robertson or Dingle Johnson dollars) would not be used to reimburse wolf-caused losses. Private donations will also be sought.

During the 2007 Montana Legislative session, a bill to establish the framework of the working group was introduced and passed (HB364). The legislation created the Livestock Loss Reduction and Mitigation Board to administer programs for the mitigation and reimbursement of livestock losses by wolves. It also established the quasi-judicial board, its purpose, membership, powers and duties, and reporting requirements. The Board is administratively attached to the Montana Department of Livestock, but its role and duties are wholly independent from the Department and the Montana Board of Livestock and vice versa. Late in 2007, the Governor appointed the Board.

The legislation also codified much of the actual draft framework in state law. It directed the Board to establish a program to cost-share with livestock producers who are interested in implementing measures to decrease the risk of wolf predation on livestock. It also directed the Board to establish and administer a program to reimburse livestock producers for losses caused by wolves. While some details of the grant program (loss reduction) and the reimbursement program (loss mitigation) are established in statute, the Board will still need to establish additional details through a rule-making process, which will include public comment opportunities.

HB364 also establishes special state and federal revenue accounts, respectively. The funds may only be used for the purposes of implementing the loss reduction grants program and reimbursing wolf-caused losses. HB 364 also established a trust fund with an intended principal of \$5 million dollars. The earned interest of which funds the program. The Legislature did not, however, appropriate dollars for either of the special revenue accounts or the trust fund.

The 2007 Montana Legislature did appropriate "start up" funds in the amount of \$60,000 in each year of the biennium to pay for initial operating expenses of the Board. The appropriation also included 1.0 FTE to support the work of an individual who works for the Board and conducts the day to day business of the program. This individual was hired late in 2007 and the initial orientation and coordination has begun.

The first meeting of the Montana Livestock Loss Reduction and Mitigation Board is scheduled for early 2008. Rulemaking is expected in 2008 to finalize outstanding details and establish them in the Administrative Rules of Montana. Fundraising is also expected to get underway in 2008.

The creation of an adequately funded loss reduction and damage mitigation program will help determine the degree to which people will share the land with wolves, to which the success of wolf recovery can be assured into the future, and the degree to which individual livestock operators who are adversely affected economically by wolf recovery are able to remain viable. Maintaining private lands in agricultural production provides habitat for a wide variety of wildlife in Montana and is vital to wolf conservation in the long run.

## **PACK SUMMARIES**

### **Northwest Montana Endangered Area**

#### **Overview**

In 2007, we documented a minimum estimate of 213 wolves in 36 packs in the Montana portion of the NWMT recovery area. This is an increase from 167 wolves in 31 packs at the end of the year in 2006. There were 7 newly identified packs in 2007. Some of these packs are believed to be first year packs, and some are likely to have existed the previous year.

Forty-one radio collared wolves in 29 packs, or 80% of the 36 total packs, were monitored in northwest Montana during 2007. This is up from 58% of 31 total packs in 2006. Two additional radio collared packs, Kootenai North (west of Koocanusa Reservoir) and Spruce Creek (aka Nettie in 2005) (North Fork Flathead), were also monitored, but appear to spend most, or all, of their time in Canada. Radio collared wolves were located from aircraft approximately 1–2 times per month. Radio collared wolves in and around Glacier National Park (GNP) were located more frequently from the ground by GNP staff. Twenty-seven radio collared wolves from 19 packs and 2 dispersers (55% of the 36 total packs and dispersers) were being monitored in northwest Montana by the end of 2007.

MFWP traplines were set in 18 pack territories, and 18 wolves were captured in 2007. Fifteen were radio collared and 3 were too small to collar. USDA Wildlife Services trapped in 6 additional areas and collared 7 wolves. Two of these areas were trapped with the cooperation of both the Blackfeet Tribe and the Salish Kootenai Tribes on their respective reservations. Fur trappers captured 1 non-target wolf. This is down from 5 non-target captures in 2006. That wolf was killed in a lethal coyote snare.

MFWP surveyed a total of 23 areas for wolf presence and pack status. Five of those areas resulted in the verification of new packs. Wolf activity was verified in 2 other areas, but it is unclear whether they are discrete packs or areas used by adjacent packs. These areas will be scheduled for survey again in 2008. Ten of those surveys were conducted to determine pack status in areas of known packs that do not have functioning radio collars. There were 6 areas

where definitive wolf sign could not be determined and will be scheduled for survey again in 2008. Two more new packs were verified one each by personnel of the Salish Kootenai Confederated Tribes and USDA Wildlife Services.

Packs included in the Montana portion of the NWMT recovery area as of December 2007 were Ashley, Blue Mountain, Camas Prairie, Candy Mountain, DeBorgia, Elevation Mountain, Fishtrap, Firefighter, Flathead Alps, Great Bear, Hewolf Mountain, Hog Heaven, Kintla, Kootenai South, Ksanka, Lazy Creek, Livermore, Lost Soul, Lydia, Marias, Meadow Peak, Mineral Mountain, Monitor Mountain, Murphy Lake, Ninemile, Nyack, Pulpit Mountain, Red Shale, Salish, Silver Lake, Spotted Bear, Squeezer, Superior, Thompson Peak, Whitefish, and Wolf Prairie. Newly documented wolf packs in 2007 included the Blue Mountain, Camas Prairie, Firefighter, Mineral Mountain, Monitor Mountain, Salish, and Silver Lake (Table 1a).

Along the Montana/Idaho transboundary area within the NWMT Recovery area, the Calder Mountain and Solomon Mountain packs are believed to den and spend most of their time in Idaho and therefore are counted towards the Idaho wolf population. Along the transboundary area between the NWMT and CID recovery areas, the Bitterroot Range and Fish Creek packs den and spent most of their time in Idaho and are therefore counted towards the Idaho population. Along the US/Canada Border, the Kootenai North and Spruce Creek (aka Nettie in 2006 annual report) packs spend most or all of their time in Canada and are not counted towards the NWMT population.

Reproduction was confirmed in 28 of the 36 packs (Table 1a). Twenty-three of the 28 packs known to reproduce met the criterion to be counted as Breeding Pairs. Breeding pair status could not be documented in some packs either because they were uncollared and therefore more difficult to obtain data, or we were unable to confirm a minimum pup survivorship of 2 at the end of the year. Three packs appeared to not have reproduced.

Thirty-two total wolf mortalities were documented in the Montana portion of the NWMT recovery area population in 2007. All but 5 were attributed to some form of human cause including 19 lethally removed in control actions, 1 illegally killed, 1 legal harvest (Canada), 1 non-target incidental coyote snare, 4 vehicle collisions, and 1 train collision. One wolf died of pneumonia. Four other wolves died of unknown causes.

A total of 6 radio-collared wolves were missing by the end of the year. Missing collars are due to long-range dispersal, collar failure, or other unknown fate.

Three dispersals were recorded. One of these took place in 2005, but was not discovered until this year. Female wolf 326, who had been missing from the Fishtrap pack since October of 2005, was found in the St. Regis River drainage. She is now part of the Mineral Mountain pack. Female wolf NW191F, who has been missing from the Elevation Mountain pack since July 2007, was found on the Rocky Mountain Eastern Front. At this time we do not know if she is associated with other wolves but is suspected to still be alone. Another dispersal was also recorded from the Willow Creek pack in Alberta Canada. Wolf WC7 was captured on 10/31/06 approximately 75 miles northwest of Lethbridge, Alberta, and collared with an ARGOS GPS collar. WC7 began to disperse around 3/23/07, entered the United States in the North Fork

Flathead valley on 3/30, and traveled through NW Montana and entered Idaho in the vicinity of Lookout Pass on I-90 on 5/7. WC7 appears to have settled in an area 260 miles away from his natal pack near Clarkia and Boville, ID.

In NWMT, the number of confirmed livestock and dogs killed was up from 2006 as well as number of wolves lethally controlled. The increase was due primarily to continued depredations and subsequent control of the Hewolf pack. Hewolf depredations began in 2006 and continued through much of 2007. The number of packs or lone wolves involved in livestock depredations also increased in 2007. We documented 35 confirmed livestock and dog kills. There were 26 cattle, 5 sheep, 3 dogs, and 1 llama. An additional 4 calves were ranked as probable kills, 3 calves were probable injured, 4 calves were confirmed injured, 1 llama confirmed injured, and 2 horse/mule (1 each) was probable injured. Six or seven of 36 packs (we were unsure which pack was involved in 2 dead and 1 injured calves) and 4 lone wolves were involved in confirmed killed or injured livestock, and a total of 19 were lethally removed as a result. Twelve wolves were removed from the Hewolf pack. These figures only account for verified losses. It is unavoidably impossible to account for the proportion of unverified losses due to wolves. Unverified losses are losses where the cause of dead or missing livestock is not known. Turbo Fladry (electrified fladry) was used in the Hewolf pack territory as part of research on the efficacy of that tool (see research section below). Regular fladry was used as a preventative measure in 2 different instances across 2 different packs.

### **Verified Packs (Table 1a in Appendix 3)**

#### Ashley

- 4 wolves; not a breeding pair
- no depredations reported

*History:* Discovered in 2006. Their home range is NW of Kalispell.

*2007 Activities:* This area was surveyed at different times from May-September. Trapping occurred in August and NW243F was captured on 9/8/07. On 9/18 we documented 9 wolves in this pack, but by the end of the year we could only document 4 wolves including 1 pup. NW243F has been missing since 12/18 and appeared to be by herself and outside the Ashley home range at that time. This pack is no longer collared.

#### Blue Mountain

- at least 4 wolves; not a breeding pair
- no depredations reported

*History:* First documented in 2007.

*2007 Activities:* In early 2007 several residents in the Blue Mountain area, west of Missoula reported seeing a single black wolf. Due to the amount of dog use in this area it was difficult to confirm. Other reports of wolf activity continued to come in later in the spring and FWP personnel found wolf scats up the Blue Mountain road in early summer. Due to the amount



of human use in the area trapping was not attempted. Hunters reported at least 2 black wolves in the area during the fall. In September FWP personnel cut 2 sets of tracks in the Grave Creek area. In December FWP followed up on a report of 4 wolves from a lion hunter in the Albert Creek area and cut 4 sets of tracks.

#### Camas Prairie

- 3 wolves; not a breeding pair
- no depredations reported

*History:* New in 2007

*2007 Activities:* The Salish Kootenai Tribe documented this pack in the fall of 2007. There is nothing else known about this pack. Their home range is near Perma, MT. There are no radio collars in this pack.

#### Candy Mountain

- 4 wolves; not a breeding pair
- no depredations reported

*History:* The Candy Mountain pack was first discovered as a new pair and an adult female (351) was radio collared in 2003. The Candy Mountain territory is in the Yaak River drainage.

*2007 Activities:* There were 11 wolves in the Candy Mountain pack in the beginning of 2007. By the end of the year we could only document 2 pups and 2 adults. Wolf 351, the assumed alpha female, has been missing since 10/15. Her collar was 4 years old at that time and possibly expired. Candy Mountain pack is not a breeding pair this year since we could not document the status of the alpha female at the end of the year. In October we surveyed for both the 2005 and 2006 dens. We located and documented the 2005 den, but could not locate the 2006 den. This pack is no longer collared.

#### DeBorgia

- at least 4 wolves; breeding pair
- no depredations reported

*History:* First suspected in 2005 and confirmed in 2006.

*2007 Activities:* At the end of 2006, six wolves were believed to be in the DeBorgia Pack. Alpha female NW85F continued to be tracked during 2007. NW85F localized in Montana during April and was believed to have denned. In August, 2 gray pups were seen from the air. Very few other visuals were obtained during the rest of the year. At the end of 2007 at least 2 adults and 2 pups were believed to be in this pack. DeBorgia is a Montana/Idaho border pack but is counted as a Montana pack for 2007 because they denned in Montana and the majority of 2007 aerial telemetry locations were in Montana.

Elevation Mountain

- at least 6 wolves; breeding pair
- 3 injured calves probable

*History:* First documented in 2006.

*2007 Activities:* At the end of 2006, five wolves were believed to be in the Elevation Mountain pack. In March three calves were injured and were written up by WS as probable wolf damage. WS attempted to collar and release during this time but no wolves were caught. FWP initiated a trapping effort in May and captured and released a yearling female. This wolf (NW191F) dispersed 2 weeks later and wasn't found again until late November when FWP found her by herself during a monitoring flight west of Choteau on the Rocky Mountain Front. FWP continued trapping efforts on and off throughout the rest of the summer but no other wolves were captured. In July FWP documented 6 pups (5 black, 1 gray) and 2 adults (both black) from the ground. At the end of 2007 FWP documented at least 6 wolves were still present through snow tracking.

Fishtrap

- 7 wolves; breeding pair
- no depredations reported

*History:* The Fishtrap pack was first documented in 2000. Its territory is in and around the Thompson River, McGuiness Creek, and Fishtrap Creek drainages.

*2007 Activities:* Wolf 270s collar and wolf 266s collar are both old (6 and 5 years respectively) and are due for battery expiration. We conducted a trapline in July to place a new collar in the pack. Wolf NW221F was captured on 7/30. The dispersal of Fishtrap wolf 326 was documented in 2007. Female wolf 326 had been missing from the Fishtrap pack since October 2005 and was observed in October 2007 as part of the Mineral Mountain pack northwest of St. Regis. This is approximately 40 mile dispersal distance. We speculate that she may be the alpha female of the Mineral Mountain pack. There are still 3 functioning radio collars in the Fishtrap pack.

Firefighter

- 8 wolves; breeding pair
- no depredations reported

*History:* New pack in 2007.

*2007 Activities:* MFWP bear biologists discovered this pack. Trapping was attempted in September but no wolves were captured. This pack is not collared.

Flathead Alps

- 10 wolves; breeding pair
- no depredations reported

*History:* Discovered in 2006. The home range is located in the Bob Marshall Wilderness Area in the White and South Fork Flathead River drainages.

*2007 Activities:* Activity was documented in and around the den area during the denning period. Both the den and pups were discovered by back country recreationists. Forest Service personnel reported a wolf with a radio collar in this pack, but we have not been able to verify a functioning collar in area.

### Great Bear

- 4 wolves; breeding pair
- no depredations reported

*History:* The Great Bear pack was first discovered as a new pair in 2003 after wolf 271 dispersed from the Spotted Bear pack and paired with another wolf of unknown origin. This pack's territory is along the Middle Fork of the Flathead River and tributaries within the Great Bear Wilderness. The radio collar is suspected to have failed in March 2004.

*2007 Activities:* Reproduction and numbers were documented by MFWP bear biologists working in the area. Forest Service personnel reported two wolves with radio collars in this area, but we have not been able to verify a functioning collar in area.

### Hewolf Mountain

- 4 wolves; not a breeding pair
- 7 calves, 2 cows, 1 yearling, 1 llama confirmed killed, 1 calf, 1 llama confirmed injured, 1 calf probable; 12 wolves killed by WS/Tribe

*History:* First suspected in 2005 and confirmed in 2006.

*2007 Activities:* Six wolves were suspected in the area at the end of 2006 but eight adults were documented in June 2007. During the winter, CSKT, WS, and FWP collaborated on a turbo-fladry research project with Utah State University. Turbo-fladry was installed at multiple ranches west of Arlee. No depredations were recorded within the fladry lines during this time and the project finished up in the spring. However, depredations persisted and became chronic throughout the rest of the year. In May, two calves and 1 llama were confirmed killed and a second llama was injured. Control actions were initiated. WS and the CSKT tribe collared and released a yearling male (NW180M) at this time. In June, two more calves were confirmed killed and 1 calf was probable. WS/CSKT trapped and killed 1 wolf in early June and trapped and released 1 pup. Another calf was confirmed killed in mid-July. Two wolves were killed in July. At this time, CSKT decided to remove the entire pack. In August, one calf and one cow were confirmed killed. One wolf was killed in early August. In early September 4 wolves were killed (including NW90F and NW180M) and later in the month an additional 4 wolves were killed, including 2 pups. Another calf was confirmed killed in mid-September. A female pup (NW242F) was collared and released in early September. A cow was confirmed killed in November and a yearling was killed in December. In December NW242F was recaptured at the site of the carcass and her collar was refitted. Two wolves that were killed during control efforts during the year were not recovered. Efforts were ongoing at the end of 2007 to remove the remainder of the pack, which was believed to consist of one adult and 3 pups.

Hog Heaven

- 6 wolves, breeding pair
- 1 cow and 2 calves confirmed killed; 1 wolf lethally removed by Wildlife Services.

*History:* The Hog Heaven pack was first documented as a new pair in 2001, after wolves 278 and 286 from the Parsnip group (a group of wolves translocated in 2001 from the Boulder Creek pack as a management response to cattle depredations), traveled separately to the Hog Heaven/Browns Meadow area and paired.

*2007 Activities:* The status of this pack was unknown at the beginning of the year and there were no functioning radio collars. This area was surveyed in August and wolf presence was documented. On 8/21 an adult cow was confirmed killed by wolves. Wildlife Service trapped 2 wolves, collared NW231F, and released both on 8/22. On 10/22 2 calves were confirmed killed and Wildlife Services lethally removed 1 wolf on that same day. No further depredations were reported. There is one radio collar in this pack.

Kintla

- 4 wolves; breeding pair
- no depredations reported

*History:* The Kintla pack was first documented as a pack in 2000 in the old North Camas territory. The North Camas pack had previously existed from 1990 to 1996 and then fell apart as the neighboring South Camas pack grew to 18 animals in 1997. From 1997 to 1999, South Camas appeared to be the only pack in the area until 2000, when the Kintla pack established itself in the old North Camas territory (see Whitefish pack summary for additional information). The Kintla pack's home range is in the North Fork Flathead River drainage, and spends most of their time within GNP.

*2007 Activities:* Wolf 255's collar is 6 years old and due for battery expiration. We conducted a trapline in May to place a new collar in the pack. On 5/15 we captured and collared NW185F. We located and documented the den in May after the pack vacated the den. On 10/16 NW185F was found illegally killed in Canada ½ mile north of the US/Canada border and Glacier National Park. Wolf 255's collar was still functioning at the end of the year.

Kootenai South

- 4 wolves; breeding pair
- no depredations reported

*History:* Since 2005 the former Kootenai pack now consists of the Kootenai North and Kootenai South packs through either the mechanisms of dispersal or pack splitting. The Kootenai South pack occupies a territory mainly south of the U.S./Canadian border and west of Koocanusa Reservoir, while the Kootenai North pack (collared wolf 329) occupies a territory mainly north of the border and west of Koocanusa Reservoir.

*2007 Activities:* This pack was uncollared in the beginning of 2007. We surveyed this area in June. On June 28 we captured 2 wolves, collared NW207F, and released a pup that was too small to collar. NW207 was reported by Canadian biologists as legally harvested in Canada approximately 5 miles north of the US/Canada border. This is the second time in as many years that we collared a wolf that would be legally harvested in Canada later that year. This pack is uncollared at the end of the year.

### Ksanka

- 6 wolves; breeding pair
- no depredations reported

*History:* Ksanka was first documented in 2006 with the discovery of dispersing wolf 263 from the Kintla pack. This pack is east and southeast of Eureka.

*2007 Activities:* The only collar, wolf 263, was missing at the beginning of the year. Public sources reported and even photographed a radioed wolf indicating that likely his collar failed prematurely. Surveys were conducted in this area in June and a subsequent trapline was initiated. NW199M was captured on 6/16. We located and documented the den site in September. This pack has 1 radio collar.

### Lazy Creek

- 8 wolves; breeding pair
- no depredations reported

*History:* The Lazy Creek pack was first discovered as a newly formed pair in 2001. This pack filled the vacant territory left by the Whitefish pack when it crossed the Whitefish range to the east and displaced the South Camas pack in 2001. Their territory is north of Whitefish Lake.

*2007 Activities:* In September we documented 14 wolves (including pups) in this pack. By the end of the year we could only document 8 wolves (including 2 pups). The Lazy Creek pack has 2 collars (261 and NW026M).

### Livermore

- 10 wolves; breeding pair
- no depredations reported

*History:* Livermore was first documented in 2005 and its home range is within the Blackfeet Tribe Reservation.

*2007 Activities:* This pack was uncollared at the beginning of the year. On 3/19 a wolf was documented to have died of natural causes. In June, a calf was injured by wolves from the Livermore pack. Subsequently, the Blackfeet Tribe and Wildlife Services captured and collared NW256M on 6/29 to monitor the pack more closely. Blackfeet Tribe biologists monitor this pack. There is 1 collar in this pack at the end of the year.

Lost Soul

- ? wolves; not a breeding pair
- no depredations reported

*History:* Lost Soul was first observed in 2006 after following the dispersal of NW036F from the Kootenai South pack. She occupied the area with one other wolf. Their territory is located northeast of Libby.

*2007 Activities:* NW036F localized during the denning season and was assumed denned. She has been missing since June. We surveyed the potential den area in September and found no wolf sign or anything to indicate there ever was a den in the area. The status of this pair/pack is therefore unknown. We will survey this area during the denning season in 2008. There are no radio collars in this pair/pack.

Lydia

- 8 wolves; breeding pair
- 3 confirmed calves killed, 1 probable, calf killed; 2 wolves lethally removed.

*History:* This pack was first documented in 2006. Their territory is south of Eureka.

*2007 Activities:* This pack was not collared in the beginning of the year. We surveyed the area in June, set trapline, and captured and collared NW197F on 6/10. Wildlife Services confirmed a wolf killed calf 1 week later on a Forest Service grazing allotment. FWP initiated daily hazing operations in an attempt to push the pack off the grazing allotment. It is not known if these efforts were successful in the short term. During this time 2 different dens were located and documented. Three calves were confirmed or ranked probable killed by wolves in early August on the same Forest Service grazing allotment. One pup was captured and released during control action operations. Ultimately 2 wolves, including newly collared NW197F were lethally removed. No further depredations were reported. This pack is uncollared.

Marias

- 6 wolves; breeding pair
- no depredations reported

*History:* This pack was first documented in 2005 and occupies an area around the Marias Pass area.

*2007 Activities:* This pack has never been collared. We surveyed this area in September, set traps, and captured a pup that was too small to collar on 9/14. Survey efforts also verified minimum numbers of adults and pups. There are no collars in this pack.

Meadow Peak

- 3 wolves; not a breeding pair
- no depredations reported

*History:* This pack was first documented in 2006. Their territory is north of Thompson Chain of Lakes.

*2007 Activity:* This pack was uncollared in the beginning of the year. In February a female wolf was killed incidentally in a coyote snare within the Meadow Peak home range. It was estimated at that time that it had been a breeding female. In July we surveyed the area, set traps, and subsequently captured and collared NW216F on 7/24. There was never any evidence of reproduction. This pack has one collar.

Mineral Mountain

- 6 wolves; breeding pair
- no depredations reported

*History:* New in 2007.

*2007 Activities:* This pack was discovered by MFWP game wardens in the 06/07 winter and was thought to be uncollared in the beginning of the year. This area was surveyed and trapped in both April and August. On 8/18 a pup was captured after the pack moved the pups to a different rendezvous site 2 miles from the previous site. On 8/24 NW233F was captured and collared. She was missing for 4 months after this capture. On 10/24 missing wolf 326 was discovered in the Mineral Mountain territory. Female wolf 326 had been missing from the Fishtrap pack since October 2005. This is approximately a 40 mile dispersal. We speculate that she may be the alpha female of the Mineral Mountain pack. Since then, on 12/18, NW233F has reappeared and both collars have been located together. This pack has 2 collars in it.

Monitor Mountain

- 5 wolves; not a breeding pair
- 4 confirmed calves killed, 2 probable calves killed; 3 wolves lethally removed.

*History:* New in 2007. Their home range is NE of Lincoln on the Eastern Front and the Scapegoat Wilderness.

*2007 Activities:* This pack was discovered after a new pair of wolves was confirmed to have killed 2 calves and 2 probable kills on private land in January. In March NW159M was captured and radio collared. The pair dened and produced 6 pups that survived into November. At that time the pack returned to the same ranch and depredated again in November. Wildlife services attempted to helicopter dart and collar an additional wolf during this time, but that operation was unsuccessful. In December the pack killed another calf. Wildlife Services removed 3 wolves from the pack including the alpha female and 2 pups. At the end of the year this pack consisted of only one adult and 4 pups and therefore does not count as a breeding pair in 2007. There is one radio collar in this pack at the end of the year.

Murphy Lake

- 2 wolves; breeding pair
- no depredations reported

*History:* The Murphy Lake pack was first documented 16 years ago in 1991. This pack had confirmed depredations in only 2 of the last 16 years. Their territory is between Whitefish and Eureka.

*2007 Activities:* This pack was uncollared in the beginning of the year. We received a report from one of our public sources indicating that the den area may be located. We confirmed pups immediately and began to trap around this location for 5 weeks and were unsuccessful. We located and documented the den after the pack vacated. This pack remains uncollared.

Ninemile

- 6 wolves; breeding pair
- 2 dogs killed

*History:* The Ninemile pack has inhabited the Ninemile drainage since 1990.

*2007 Activities:* At the end of 2006, six wolves were believed to be in the Ninemile pack: 3 black adults, 2 gray adults, and 1 gray pup. NW61M, who was collared in 2005, disappeared in early 2007 and is believed to have dispersed. NW56F, who was also collared in 2005, was monitored up until April 2007 when her collar was believed to have failed. Numerous residents reported spotting a collared black wolf throughout the year, so she is believed to still be alive. FWP collared an adult gray male in July but the collar slipped two weeks later. Other attempts to collar/release were initiated in the fall with no success. The pack remains uncollared at the end of 2007. The Ninemile pack produced at least 2 pups in 2007. Two dogs were confirmed killed by wolves in the valley, one in May and another in September. At the end of 2007, at least six wolves were believed to be in the Ninemile pack: 4 adults, and at least 2 pups.

Nyack

- 2 wolves; not a breeding pair
- no depredations reported

*History:* This pack was first documented after discovering a dispersing collared wolf from the Halfway pack in 2006.

*2007 Activities:* In the beginning of the year there were 3 wolves in this pack, but by the end of the year we could only account for 2 wolves. There was never any evidence of reproduction.

Pulpit Mountain

- 3 wolves; not a breeding pair
- no depredations reported



*History:* This pack was first documented in 2006. Their territory is east of Troy and northwest of Libby.

*2007 Activity:* At the beginning of the year this pack was uncollared. We surveyed the 2006 den and surrounding areas in May and found no sign. We surveyed the estimated home range in October and located what we believe to be the Pulpit Mountain pack and observed 2 adults and 1 pup. Trapping operations were unsuccessful. There are no collars in this pack.

### Red Shale

- 7 wolves; breeding pair
- no depredations reported

*History:* The Red Shale pack (historically referred to as Gates Park or Sun River) was first documented as a pair in 2000 and was believed to have had a continuous tenure in the North Fork of the Sun River ever since. This pack was radio collared in 2002, but has not had a functioning collar since March 2004. Monitoring this pack was coordinated between MFWP and US Forest Service.

*2007 Activities:* There were no collars in this pack at the beginning of the year. Forest Service personnel documented a minimum of 7 wolves including 5 pups. There are no collars in this pack.

### Salish

- 5 wolves; not a breeding pair
- 1 yearling and 1 calf confirmed killed; 1 wolf lethally removed.

*History:* New in 2007. Their territory is in the Salish Mountains west of Flathead Lake.

*2007 Activities:* This pack was discovered after a confirmed wolf depredation on a calf in early May. A subsequent survey of the area turned up wolf activity in a distant corner of the Hog Heaven pack territory. On 5/23 NW190M was captured and collared in that area. On 6/11 another calf was confirmed killed by wolves. On 7/3 1 wolf was lethally removed from the pack. No further depredations were reported. Three pups were discovered dead of unknown causes at different times and in different areas from September – October. October we documented 9 wolves in this pack but could only account for 5 at the end of the year. The Salish pack is exclusively occupying the southern portion of the old Hog Heaven pack territory. There is one radio collar in this pack.

### Silver Lake

- at least 2 wolves; not a breeding pair
- no depredations reported

*History:* First documented in 2007.

*2007 Activities:* In April 2007 a black bear hunter reported seeing 5 black wolves in the Silver Creek drainage south of Saltese, close to the Idaho border. FWP followed up 2 days

later and found multiple wolf tracks in the area but there was still too much snow to initiate trapping efforts. FWP personnel scouted the area again in August but only found old wolf sign on the Montana side. Other public reports came in later in the summer on the Idaho side west of Dominion Peak so it is likely the wolves spent the latter half of the summer in Idaho. Silver Lake is a Montana/Idaho border pack but is counted as a Montana pack for 2007 since locations during the denning period were in Montana.

### Spotted Bear

- 8 wolves; breeding pair
- no depredations reported

*History:* A Murphy Lake female wolf dispersed to the Bitterroot Valley and mated with a male wolf of unknown origin forming the Bass Creek pack in 1998. The Bass Creek pack was involved in cattle depredations in June 1999. The entire pack (2 adults and 8 pups) was removed from the wild and held at a facility in McCall, Idaho. The alpha male died in a handling accident while in captivity. Three pups died of canine parvovirus in captivity. The alpha female and surviving pups were translocated to a holding pen in the Spotted Bear area in December 1999. The pen was intended to hold the pack for several days to allow acclimation to the new area, and prevent the pack from splitting and dispersing from the area. The first night in the pen, male wolf 117 from the Pleasant Valley Pack, translocated to the same area almost a year previous, was hanging around the pen. The Bass Creek pack was released the next day and joined with the former Pleasant Valley male wolf. The new group established a territory in the South Fork of the Flathead and became the Spotted Bear pack.

*2007 Activities:* At the beginning of the year the pack appeared to consist of around 3 animals. Reproduction was confirmed and by the end of the year there were 8 animals including 4 pups. There are 2 radio collars in this pack.

### Spotted Dog

- status unknown
- no depredations reported

*History:* The Spotted Dog pack was first verified in July 2005, but was believed to have existed the previous year, possibly longer. MFWP first received reports in the area from landowners, contractors, and hunters in late 2004. Its territory appeared to be primarily south of Avon, but reports of at least 8 animals were received north of Avon in 2005.

*2007 Activities:* The collared female became missing in late February 2007 and no further contact with the pack occurred all year. Project personnel made several attempts to locate sign of wolves in the Spotted Dog territory but never found anything. Very few reports were received from landowners or the public. Status of this group is unknown.

Squeezer

- 9 wolves; breeding pair
- no depredations reported

*History:* This pack was first documented in 2006. Their territory is in the Swan Valley.

*2007 Activities:* We ran a trapline in early May and captured and collared the alpha female and an adult male. There are 2 radio collars in this pack.

Superior

- 8 wolves; breeding pair
- no confirmed depredations

*History:* First documented in 2005.

*2007 Activities:* At the beginning of 2007, little was known about the Superior pack. In early January a landowner in the Superior area reported a dog missing after wolves had passed through the property that night. The dog was never found. FWP hung fladry on their property as well as 2 other properties in the area to help protect horses, goats, and dogs during the winter. Two wolves from the Superior pack were killed in early 2007. One wolf was hit by a train in January and another hit by a vehicle on I-90 in April. FWP initiated trapping efforts in April and collared and released a yearling male. Two weeks later in mid-May, this wolf (NW174M) was hit and killed by a vehicle on I-90. A passing motorist picked up the collar but the carcass was never retrieved. In August, FWP initiated a second trapping effort and collared and released a black adult male, NW224M, who is believed to be the alpha male. FWP documented 4 pups from the ground in mid-August. This pack is a Montana/Idaho border pack but is counted as a Montana pack for 2007 because they denned in Montana and the majority of 2007 aerial locations were in Montana. Eight wolves (4 adults, 4 pups) were seen together at the end of 2007.

Thompson Peak

- 13 wolves; breeding pair
- no depredations reported

*History:* This pack was first documented in 2006. Their territory is in north of Plains.

*2007 Activities:* This pack was uncollared in the beginning of the year. We started a trapline for this pack in mid July and on 8/2 we captured and collared NW223F. There is 1 collar in this pack.

Whitefish

- 15 wolves; breeding pair
- no depredations reported

*History:* The Whitefish pack was first documented in 1996 and formerly occupied a territory north of Whitefish Lake. In 2001, the Whitefish pack crossed the Whitefish Range to the

east and established a new territory in the North Fork Flathead River drainage, displacing the former South Camas pack. The Whitefish pack's home range is in the North Fork Flathead River drainage, and spends most of their time within GNP.

*2007 Activities:* In the beginning of the year there were 8 wolves in this pack. By the end of the year we had documented 15 wolves in this pack. There is 1 radio collar in this pack.

#### Wolf Prairie

- 3 wolves; not a breeding pair
- 1 confirmed calf injured.

*History:* The Wolf Prairie pack was first documented in 2004, after receiving livestock depredation complaints. Its territory is NW of Pleasant Valley.

*2007 Activities:* In the beginning of the year there were 3 wolves in this pack and they showed no signs of denning. At the end of the year there were 3 wolves in this pack. This is the second year this pack has not reproduced since the alpha female, 331, was hit and killed by a train at the end of February 2006. The suspected alpha male, wolf 330, has also been missing since that time. There is 1 collar in this pack.

### **Verified Border Packs Counting in the Idaho Population Estimate (Table 3 in Appendix 3)**

#### Bitterroot Range

- at least 5 wolves; breeding pair
- no depredations reported

*History:* First documented in 2007.

*2007 Activities:* There were numerous public reports of a group of wolves in the North Fork of Fish Creek and Goose Creek areas in 2007. FWP personnel backpacked into the area and investigated in September and found this pack's rendezvous site. Three gray adults and 2 gray pups were documented. No collaring attempts were made. Since the rendezvous site was found on the Idaho side this pack counts in Idaho estimates for 2007.

#### Calder Mountain

- 4 wolves; not a breeding pair
- no depredations reported

*History:* The Calder Mountain Pack was first documented in 2005 through cooperative efforts of MFWP and IDFG. This pack occupies an area west of Troy.

*2007 Activities:* This pack is thought to den and spend most of their time in Idaho and therefore count towards the Idaho population and mainly monitored by IDFG. There are no radio collars in this pack.

*Fish Creek*

- 9 wolves; breeding pair
- no depredations reported

*History:* The Fish Creek pack was first documented in 2001 and is believed to have had a continuous tenure in the Fish Creek area since then.

*2007 Activities:* Two radio-collared wolves, B235F and B236M continued to be monitored through 2007. The Fish Creek pack denned in Idaho in 2007 and had a minimum of 4 pups. They are counted as an Idaho pack in 2007 but continue to use parts of the Fish Creek drainage in Montana.

*Solomon Mountain*

- 8 wolves; not a breeding pair
- no depredations reported

*History:* New in 2007. Their territory is in Montana and Idaho between the Moyie and Yaak rivers.

*2007 Activities:* This pack was discovered after radio collared Idaho wolf B296 dispersed from the Boundary pack (Idaho panhandle) into this area. Eight wolves were documented in 2007. The collar is believed to have been shed in December. This pack is no longer collared.

**Verified Border Packs in Canada that Do Not Count in the Montana Population Estimate***Kootenai North*

- ? wolves
- no depredations reported on the U.S. side of the border

*History:* Kootenai North was formed from the former Kootenai pack and is a product of either splitting (into Kootenai North and Kootenai South) or is a product of dispersal. The former Kootenai pack was a transboundary pack that has denned both in Canada and the US. The Kootenai North pack occupies a territory mainly north of the U.S./Canadian border and west of Koocanusa Reservoir, while the Kootenai South pack (collared wolf 329) occupies a territory mainly south of the border and west of Koocanusa Reservoir.

*2007 Activities:* Because this pack spends most of its time in Canada, most of our monitoring is from the US side of the border. This pack was located 1 time in Canada, and signals were detected another 2 times from the US side of the border indicating the pack was near the US/Canada border. Because of infrequent monitoring, we have not collected numbers information in 2007.

*Spruce Creek (aka Nettie in 2006 annual report)*

- 4 wolves
- no depredations reported on the U.S. side of the border

*History:* This pack was first documented as a new pack in 1990 and spends most of its time in Canada. This pack has been monitored irregularly since then because it spends most of its time in Canada. In September 2006 a missing wolf from the Lazy Creek pack was found in this area with other wolves. This newly discovered pack was given the name Nettie. However in April the radio collared animal was found at the traditional Spruce Creek den multiple times. Therefore it is now assumed that this is actually the Spruce Creek pack and the name has therefore reverted back.

*2007 Activities:* We monitored this pack through the beginning of September when it was discovered that wolf 272 had his collar chewed off by pack mates. Before that we had located the pack less than 2 miles within the US only 2 of 9 locations. The den is 5 miles north of the international border. Reproduction was expected but we were unable to verify pups by the time we lost the radio collar. There are no collars in this pack at the end of the year.

**Miscellaneous / Lone Individuals in Northwest Montana**

On 3/30, dispersing wolf WC7 from the Willow Creek pack in Alberta entered Montana. He was captured on 10/31/06 approximately 75 miles northwest of Lethbridge, Alberta, and collared with an ARGOS GPS collar. WC7 began to disperse around 3/23/07, traveled approximately 113 miles to the south and entered the United States in the North Fork Flathead valley on 3/30. From there he traveled down the North Fork Flathead to Columbia Falls, followed the Whitefish Range north, crossed Highway 93 near Stryker, headed south through the Salish Range, through Pleasant Valley, down the Thompson River Valley, crossing Highway 200 and the Clark Fork near Weeksville, over the Coeur d'alene Mountains, to I-90 where he traveled east along the interstate where he entered Idaho in the vicinity of Lookout Pass on 5/7. WC7 appears to have settled in an area near Clarkia and Boville, Idaho, which is approximately 260 miles away from his natal pack

On 4/13, a female wolf of unknown origin was killed by vehicle collision near Fort Shaw Montana. Around this time there was an injured horse and mule ranked probable wolf in the general area.

On 4/19, a male wolf of unknown origin was killed by vehicle collision on Highway 93.

Between 5/27 and 6/4 there was a lone wolf that was killing sheep near Dupuyer. There were no further visuals or depredation complaints after 6/4.

On 5/27 and 8/21, there were additional livestock losses that could not be verified against any known packs. These losses include 3 calves killed and 1 calf injured. The depredations seem to be outside of those pack territories and we suspect that there may be a third pack within this area

that is not radio collared. Therefore pack movement and landscape use in adjacent pack territories could not be ascertained.

Wolf activity was verified in 3 other areas, but it is unclear whether they are discrete packs or areas used by adjacent packs. We will continue to monitor these areas. These areas include Wigwam River northeast of Eureka and adjacent to the Ksanka pack (collared), Spar Lake south of Troy and adjacent to the Calder Mountain pack (uncollared), and 2 wolves south of Lubrecht and adjacent to the Elevation Mountain pack (collared).

### **Suspected Packs in Northwest Montana**

Beside those areas mentioned in the 'Miscellaneous/Lone Individuals in Montana' section, there is 1 other suspected pack north of Thompson Falls.

### **Other Miscellaneous Information in Northwest Montana**

Last year the McMillan pack (uncollared) was listed as one of the 2006 packs. It was estimated to exist in an area adjacent to Meadow Peak which was also uncollared. All of our public reports and field reconnaissance seemed to show that these were two discrete packs. In July the Meadow Peak pack was collared and by the end of the year they had also occupied an area previously assumed to be the McMillan pack. It is now believed that the McMillan pack and Meadow peak packs are in fact one in the same and McMillan pack has been dropped from the pack list.

## **Southern Montana Experimental Area**

### **Montana Portion of the Greater Yellowstone Experimental Area**

#### **Overview**

Packs in the MT portion of the GYA have been documented from Red Lodge to Dillon. Several packs live on the borders of YNP and WY. Agencies (YNP, MFWP, TESS and WY USFWS) monitor these packs through flights and ground tracking. The location of the den site and the percent area / time in an area determines where that pack will be tallied in the population estimates. See the respective pack summaries below.

In 2007, a minimum estimate of 87 wolves in 14 verified packs existed in the Montana portion of the Greater Yellowstone Experimental Area at the end of the year. Packs that were verified in 2006 and still existed in 2007 are Rosebud, Moccasin Lake, Baker Mountain, Buffalo Fork, Mill Creek, Eagle Creek, Dead Horse, Cougar II, Freezeout and Beartrap. The 4 packs that no longer existed by the of the calendar year were: Wedge, Swan Lake, Chief Joseph, and Mission. Of the 14 packs left at the end of the year, 7 met the breeding pair criteria. Lethal control on

depredating packs and packs with the mange parasite may attribute to this low success in breeding pairs. Lower wolf numbers inside YNP could also partly explain the difference as fewer animals in the YNP population could result in fewer animals dispersing out of YNP into Montana.

New packs formed in the GYA for 2007 are Eight-Mile, Cedar Creek, Horn Mountain, North Gravelly and a YNP pack, Swan Lake, which shifted its territory to outside of the park boundary and became a full time Montana resident pack. MFWP documented transient wolf activity in several locations throughout the MT portion of the GYA. Project staff documented the dispersal of one wolf from its capture site (SW72F) and is recorded in the lone/misc. section of this report. The Beartooth pack is a Montana/Wyoming border packs that either denned or spent the majority of its time in Wyoming in 2007 and will therefore count in Wyoming estimates.

A total of 16 wolves were caught in 2007, two of which were too small to collar. During 2007, 15 (83%) of 18 packs were monitored using ground and aerial telemetry. By the end of 2007, 14 packs remained. At the end of 2007, 7 of 14 (50%) verified packs were being monitored using ground and aerial telemetry. Ten collared animals were lost due to control actions, natural mortalities or illegal killings. Three collared animals are considered missing. Seven wolves were collared by MFWP and 7 were collared by WS. Radio-collared wolves were located 1-2 times per month by fixed-wing aircraft and ground telemetry.

In 2007, 9 of the total of 18 packs that did exist at one time during the year (50%) were confirmed to have killed livestock (Table 1b), resulting in the lethal removal of 23 total wolves (2 of which were illegal under the 10j regulation). Two of the 23 wolves controlled were lone wolves with no pack affiliation. Four of these wolves were removed by landowners utilizing shoot-on-site permits and 2 wolves were killed in the MT portion of the GYA under the 10(j) rule.

### **Verified Packs (Table 1b in Appendix 3)**

#### *Rosebud*

- 2 wolves; not a breeding pair
- 12 goats confirmed

*History:* Pack formed late in 2005.

*2007 Activities:* Two wolves traveled together throughout spring and summer of 2007. No localized activity was detected during the denning season. In November, twelve goats were confirmed killed by wolves and tracks of two wolves were present. Trapping was not attempted due to cold temperatures and the goats were removed from the property decreasing the risk of further depredations.



Moccasin Lake

- 4 wolves; not a breeding pair
- 1 calf confirmed
- 1 wolf killed on an SOS permit

*History:* This pack formed in 2004, and its territory is south-southeast of Big Timber. There was no breeding activity in 2005, but in October the Moccasin female 242F was joined by an adult male (473M) that had left the Swan Lake pack in YNP.

*2007 Activities:* The pack localized during the denning season. Three pups were documented by the end of 2007. The alpha male was found dead in the fall of the year and cause of death is under investigation. A landowner shot one wolf on his private property the day after a calf was confirmed killed by wolves using a shoot on sight permit.

The Boulder Range Rider Project continued for its third year funded by a grant from the Natural Resource Conservation Service (Environmental Quality Incentives Program, EQIP), and contributions from Keystone Conservation (an private non-governmental organization). One depredation was confirmed in early April; unfortunately the riders did not start their season for another month.

In addition, landowners in the area were part of a turbo fladry project measuring the effectiveness of this electrified flagging. The confirmed calf was not in the electrified pasture at the time it was killed. No other depredations were associated with this pack throughout the remainder of the year. The boulder rider project wishes to continue the effort and is looking for funding as the EQIP funding is limited to three years. See the Field Studies and Research section below for more detail on this project.

Mission Creek

- 1 wolf missing; not a breeding pair
- no depredations reported
- pack no longer exists

*History:* The Mission Creek pack first formed in 2002. Its territory is southeast of Livingston. Pack dynamics appeared to be greatly affected by mange. In October 2005, the alpha male succumbed to mange and died and SW28M (formerly of the Moccasin Lake pack) joined the pack.

*2007 Activities:* Of the three wolves left documented at the end of 2006, SW028M has been missing since early 2007. 457F was found on mortality in March and the fate of the uncollared gray is unknown. All three members had varying degrees of mange in 2006. The Baker Mountain pack seems to be utilizing some of the Mission Creek territory and no other wolves have been found that are associated with Mission creek. We no longer think there is a Mission Creek pack and attribute this to mange and unknown deaths.

*Baker Mountain*

- 3 wolves; not a breeding pair
- 9 sheep, 3 calves
- 1 wolf collared, 1 WS removal, 1 killed on an SOS permit, 1 illegal

*History:* This group was documented in fall 2005 shortly after SW57F was caught and collared near a depredation site. Its territory is in the West Boulder area, and just south of the Mission Creek pack.

*2007 Activities:* The pack localized during the denning season and produced five pups. By the end of 2007 only two pups were still confirmed alive. Nine sheep were confirmed killed by wolves and Wildlife Services collared and released one adult. One uncollared wolf was killed by the owner of the sheep with a SOS permit near the depredation site. In mid-May two calves were confirmed killed by wolves and the radio collared male was found in the vicinity and lethally removed. During an October telemetry flight the breeding female, SW57, was found on mortality and cause of death is under investigation. The pack no longer has a radio collar but tracks of three wolves were documented by the end of 2007.

*Buffalo Fork*

- 10 wolves; unknown breeding status
- no depredations reported

*History:* The Buffalo Fork pack formed in 2003. In June 2003, the only radio-collared member of the pack died and contact was lost. At the end of the year, 3 wolves were believed to be left in the pack. Its territory was north of YNP in the Buffalo Fork drainage. In 2005, numerous public reports were received from backcountry recreationists. In July 2005, project personnel backpacked through the historic Buffalo Fork territory in the Absaroka Beartooth Wilderness and found sign of wolf activity.

*2007 Activities:* YNP wolf personnel documented at least ten wolves in the Buffalo Fork territory while visiting outfitter camps in the fall of 2007. No radio collars exist in the pack.

*Mill Creek*

- 7 wolves; breeding pair
- 1 calf confirmed, 1 cow confirmed, 1 cow injured
- 3 wolves collared

*History:* The Mill Creek pack formed in 2000. It spent a fair amount of time on or near private property on the east side of Paradise Valley and the Yellowstone River.

*2007 Activities:* Three pups were collared and released due to confirmed depredations in August and September. No more depredations were reported after the fall of the year.

*Eight-Mile*

- 7 wolves, breeding pair
- no depredations reported

*History:* New pack formed in early 2007 and occupies a territory on the west side of paradise valley.

*2007 Activities:* An adult male was radio collared on December 11, 2006. An adult female was re-collared December 27, 2007 who turned out to be a missing wolf from the Donohue pack and whose collar was not working. The adults denned and reared five pups, all surviving through December 31, 2007.

*Swan Lake*

- 1 wolf missing; not a breeding pack
- 3 calves confirmed, 3 calves probable
- 1 wolf collared, 1 recaptured
- 1 WS removal, 1 wolf killed on an SOS permit
- pack no longer exists

*History:* The Swan Lake pack was originally a YNP group but by winter of 2006 spent their time outside of the park.

*2007 Activities:* The Swan Lake pack was documented at least three strong going into spring of 2007 and began using part of the Chief Joseph territory. After multiple confirmed depredations, traps were set to remove two individuals. The radio collared male 295 was recaptured and released. A breeding female (SW186F) was collared and released. A third wolf (SW188F) was caught and killed and two days later a landowner shot SW186F as authorized under a shoot-on-site permit. All three wolves had mange. The last known member, 295M has been missing since late summer and the pack seems to have dissolved.

*Chief Joseph*

- 2 wolves collared; 1 euthanized
- no depredations reported
- pack no longer exists

*History:* The Chief Joseph pack began as a pair of wolves in 1996 in the northwest part of YNP. It started out primarily in YNP and had been counted as an YNP pack for most years. Although the pack consistently denned within the park boundary, it has spent more and more time in Montana. Through time, Montana project personnel did more of the monitoring. The Chief Joseph pack was included in the population estimate for the Montana portion of the GYA in 2005, 2006 and 2007.

*2007 Activities:* Both collared males, wolf 394 and SW113 had moderate to severe cases of mange. They seemed to travel alone most of the time and continued to use the historical Chief Joseph pack territory. In November of 2007, a MFWP warden received a call of a sick wolf in a dog house. The warden responded and euthanized the sick animal which was wolf

394M. Inspection of the body showed severe mange and a calcified leg from an old break. Wolf SW113M continues to travel around the territory but has not been seen with any other wolves. Two other groups of wolves started to occupy parts of the Chief Joseph territory this year and it is believed that the Chief Joseph pack has all but dissolved.

#### Eagle Creek

- 4 wolves; breeding status unknown
- no depredations reported

*History:* This pack replaced the Casey lake pack and comprised of a pair of adults and two pups by the end of 2006. The Eagle Creek pack is four strong, comprised of a pair of adults and two pups at the end of 2007.

*2007 Activities:* On a July telemetry flight, SW17F was found on mortality and retrieved two days later. The carcass was quite old and cause of death has yet to be determined. Since radio contact with the pack was lost, accurate counts on the group has been limited to tracks and public reports. At least five pups were reported in the spring of 2007 and track counts have been estimated to 4 animals strong.

#### Beartrap

- 13 wolves; breeding pair
- no depredations reported

*History:* The Beartrap pack formed in 2002. It occupied a territory at the north end of the Gallatin Mountain range near the Spanish Peaks consistently since then.

*2007 Activities:* A total of 13 animals were documented at the end of 2007, seven of these are pups of the year. Trapping to collar was attempted but unsuccessful. This pack has been occupying areas that are very visible and has made counting individuals feasible.

#### Cedar Creek:

- 2 wolves; not a breeding pair
- 1 collar
- 3 confirmed calves killed; 4 wolves removed by WS

*History:* New pack in 2007. It occupied a territory at the North end of the Madison Range from Jack Creek to Cedar Creek.

*2007 Activities:* FWP and MT WS started getting reports of 4 wolves in the Cedar Creek area in early January. MT WS saw the group of 4 wolves while doing other work in the area in early February. FWP looked for this group in late February while darting elk with hopes of getting a collar in the group but could not find them that day. MT WS investigated and confirmed a wolf-killed calf on March 3rd, in the Cedar Creek area. A second calf carcass was found on the 4th and was thought to have been killed the same night as the first calf. MT WS was authorized to remove one wolf and collar one wolf. A SOS permit was issued to the landowner. On April 3<sup>rd</sup> MT WS confirmed a 3<sup>rd</sup> wolf-killed calf in the Cedar Creek

area. The ranch manager saw 2 grays & 1 black [which they shot at and missed] (all uncollared) running out of the pasture on the 3<sup>rd</sup>. The ranch manager hazed a gray out of the cattle the previous Saturday and saw a gray at 1:30 in the afternoon thinking that it was quite bold. They had been shooting to harass the wolves away from the cattle.

MT WS set traps and caught and collared a non-lactating gray female wolf (SW166F) on the 10<sup>th</sup>, and was authorized to remove one wolf from this group. On the morning of April 11<sup>th</sup>, a 4<sup>th</sup> calf was confirmed killed by wolves. MFWP then authorized removal of the entire group of 4 wolves. On April 24<sup>th</sup> WS removed an uncollared gray male (SW 172M) and on the 26<sup>th</sup> trapped and removed a gray male (SW175M).

On May 5<sup>th</sup> WS found the den with five newborn pups and set traps in the area. On May 6<sup>th</sup> WS again checked the den and all pups were dead, as the female did not return to the den. On May 7<sup>th</sup> WS called and shot a gray male (SW178M) near the den site. On May 23<sup>rd</sup> WS aerially removed the black breeding female a considerable distance from the den site but could not remove the remaining radio collared wolf (SW166F) because it got into heavy timber. The 45-day control period ended on May 25<sup>th</sup> and the remaining collared female wolf (SW166F) was not removed. Recent reports and radio monitoring flights have indicated that SW166F is now traveling with an uncollared black wolf.

#### Cougar 2:

- 7+ wolves; breeding pair
- 2 missing radios
- no depredations reported

*History:* The Cougar Creek pack first formed in 2001 inside YNP. Its home range was mostly inside YNP and NPS personnel did all the monitoring. Since 2002, it has had 10 to 12 members.

*2007 Activities:* During the months of January and February the Cougar 2 pack was observed and monitored in the Upper Madison Valley. It is suspected that they followed migrating elk from the Upper Gallatin Valley into the Madison Valley. They were observed in and around cattle during this period but were not involved in any reported livestock depredations. They then followed migrating elk back into the Upper Gallatin where they dened. While conducting a routine monitoring flight in May, seven members of the Cougar 2 pack, including the only radio collared member, were observed on a fresh elk kill and were seen packing large chunks of meat to a rocky / forested ridge. It was later determined this was a den site for 2007, this den site was outside of YNP. Project personnel set up a trapline in the proximity of the den site. On May 19<sup>th</sup>, an adult gray wolf (SW187M) was captured and fitted with a radio collar. This pack ranges in and out of the park throughout the year. It is considered a Montana pack based on the amount of time it spends outside YNP and where it dened in 2007. MFWP conducts nearly all the monitoring for this pack now.

Dead Horse:

- Unknown; not a breeding pair
- no depredations reported

*History:* New pack in 2005. It occupied a territory at the south end of the Gallatin Mountain range from Big Sky to the Taylor Fork drainage.

*2007 Activities:* Contact was lost with this pack in the spring of 2006, repeated attempts were made to locate the pack for collaring purposes but not enough sign was ever found to warrant setting up a trapline. Several sightings from the fall hunting season indicate that this pack may still be intact and is still has a territory south of the Big Sky area.

Horn Mountain:

- 7 wolves; breeding pair
- 2 radios
- 1 confirmed calf killed

*History:* New pack in 2007. It occupied a territory at the south end of the Madison range in the Antelope Basin Area.

*2007 Activities:* In early July FWP received a report from a coyote hunter that while calling coyotes in the antelope basin area, adult wolves and pups responded by howling.

When the cattle moved into this area of the public land grazing allotment, the Madison Valley Range riders started seeing single adult wolves in the area, they also found the den site and later a rendezvous site with three black pups. Project personnel scouted the area and set up a trap line on July 22 with the help of the Madison Valley Range Riders and personnel from Keystone Conservation. On 7/23 a 38 pound black male pup (SW214M) was captured and released, as it was too small to collar. On 7/24 a 34 pound black female pup (SW215F) was captured and also released again too small to collar. On 7/28 the gray breeding female (SW219F) was captured and collared and on 7/29 the black alpha male (SW220M) was also captured and collared and traps were pulled. This pack was monitored by the Range Riders the rest of the season and was observed in and around cattle without any depredations until after the cattle were shipped. On October 11 a cow calf pair was left behind after shipping the rest of the herd and wolves killed the calf. No control action was initiated since the cows were moved off of the allotment and there was no other livestock in close proximity to the wolves.

North Gravelly:

- 6 wolves; breeding pair
- no radio collars
- 3 calves confirmed, 2 wolves removed by WS

*History:* New pack in 2007. It occupied the territory on the northwest end of the Madison valley south of Ennis.

*2007 Activities:* On August 8<sup>th</sup>, MT WS confirmed a calf killed by wolves in the North end of the Gravelly Mountains. FWP had a couple of credible reports of wolves in this area but did not document any pack activity. WS set traps in the area to collar and release to try and learn what was there. No captures were made and traps were pulled on August 9<sup>th</sup>. WS confirmed a month old calf that was killed by wolves on the north end of the Gravelly Mountains, in the Warm Springs Creek area, on a FS allotment. The calf was found dead by the livestock producer and brought to the WS agent for investigation. This was the second confirmed depredation in this area in the past month. While moving cattle off allotment in the Warm Springs area of the Gravelly Mountains on October 22nd, riders found a consumed carcass of an adult cow and jumped 5 wolves off of the carcass. The rider thought there were one adult and 4 pups. WS investigated and called it a probable wolf kill. The carcass was freshly dead and totally consumed and the area was littered with wolf sign. This was in the same area that we had 2 confirmed kills earlier this summer. FWP decided to remove two wolves from this area but because of hunting season, MTWS was asked not to conduct any control work until after the general big game season closed November 25<sup>th</sup>. On December 11<sup>th</sup> MT WS shot 2 male wolf pups (SW274M & SW275M) on the north end of the Gravelly Mountains. The control action had been temporarily postponed because of the special extended elk-hunting season in that area. A group of eight wolves were seen and all had rope tails due to mange.

*Freezeout Pack:*

- 5 wolves; not a breeding pair
- 2 confirmed calf killed, 1 wolf removed by WS

*History:* The Freezeout pack first formed in 2001 in the Gravelly Range east of Dillon. It has been one of the larger-sized and longest tenured packs in the Montana portion of the GYA outside YNP.

*2007 Activities:* On August 25<sup>th</sup>, MT WS investigated and confirmed a 600-pound calf as being killed by wolves in the Tepee Creek area, north side of the Centennial Valley. This is the same area we had problems last year and removed members of the Freezeout pack. Tepee Creek is near the Freezeout and the new Horn Mountain territories so at that point we did not know which pack was involved. WS did not hear any of the radio-collared wolves in the area during their investigation. Based on increased monitoring by WS, it was determined that it was in the Freezeout territory and a control action with SOS permits was initiated for one wolf. On the September 5<sup>th</sup> MT WS shot an uncollared gray wolf in the Long Creek area, which was a member of the Freezeout Pack and the breeding female. Two wolves, the one that was shot and the collared member of the Freezeout Pack were in the process of trying to kill a domestic calf. While retrieving the controlled wolf from the ground the calf was euthanized and confirmed as a wolf kill. This ended the control action and no other depredations were reported.

*Wedge:*

- 0 wolves (pack removed due to chronic depredation); not a breeding pair
- 5 confirmed heifers killed; 1 wolf killed on an SOS permit; 1 wolf killed under 10j regulation; 7 wolves removed by WS.

*History:* New pack in 2005. It occupied a territory at the south end of the Madison range from Mill Creek to Cabin Creek.

*2007 Activities:* The Wedge Pack denned in its normal area of past years and had a litter of 5 pups. On July 9th MT WS confirmed that wolves killed a yearling heifer, a control action on the Wedge pack has been initiated and a SOS permit was issued to the landowner for the removal of one adult wolf. On July 11<sup>th</sup>, ranch personnel reported shooting at and wounding an adult wolf using the issued SOS permit. FWP decided to leave the SOS permit active for one uncollared adult wolf. A male pup (SW208M) was shot on July 14<sup>th</sup>, by ranch personnel, on the SOS permit and a yearling female (SW209F) was killed by MT WS on the 17<sup>th</sup>. The Wedge pack control was completed. Two wolves were removed on this control action because the first one was a pup on the issued SOS permit and the control action was for one adult wolf as the pups were too young to be involved in the depredations. An employee on the ranch killed the alpha female on July 23<sup>rd</sup> under the 10j rule. This incident and the shooting of a pup under the SOS permit were investigated by USFWS law enforcement. USFWS law enforcement later concluded that the shooting of the pup under the adult-issued SOS permit and the 10j shooting was not in accordance with federal regulations, respectively. Citations were issued to the ranch and fines were paid.

On July 31<sup>st</sup>, MT WS investigated a heifer (on the same ranch) that had wounds on and around the rectum and confirmed it as wolf caused, this heifer was euthanized because of its wounds. The wounds were estimated to be several days old. FWP initiated a control action for one wolf assuming there was one adult left. On August 3rd, MT WS investigated a dead heifer in the same area as previous depredations. It too was several days old and was confirmed as a wolf kill. At that point FWP decided to remove the entire Wedge pack, assuming there was 1-2 adults and possibly 5 pups. WS attempted a control action on August 4<sup>th</sup> with no luck. Early on August 5<sup>th</sup>, the ranch called and had another injured heifer that had to be euthanized and had seen 2 adult wolves in the area and asked for a SOS permit. A SOS permit for 2 wolves was issued by MFWP to the ranch. As authorized by MFWP, MT WS removed 5 male pups (SW226M-SW230M) from the Wedge pack on August 8<sup>th</sup>. The remaining radio-collared adult was removed on August 9<sup>th</sup>. While retrieving the radio-collared wolf WS found and confirmed another heifer in the same area as the earlier depredations. All suspected members of the Wedge pack were removed.

### **Verified Border Packs Counting in Wyoming Population Estimate (Table 2 in Appendix 3)**

The Beartooth pack is a Montana/Wyoming border pack that either denned or spent the majority of its time in Wyoming in 2007. Therefore, it is counted in Wyoming estimates (Table 2) and is displayed on the Greater Yellowstone Recovery Area map (Figure 3).

### **Miscellaneous / Lone Individuals in Montana GYA**

Centennial Valley: One calf confirmed killed by an unknown wolf on May 15.

East of Lima: One lone wolf shot by a landowner under the 10j rule on March 29.



Boulder River (south of Big Timber): Four yearling ewes were confirmed killed by wolves in January of 2007. Tracks of three wolves were found at the depredation site.

SE of Livingston: One lone gray injured a llama in mid September. The llama died of its injuries a week later.

Eastern Montana (Garfield County): Two lambs were confirmed killed by wolves and ten considered probable on two separate ranches in eastern Montana in late August 2007. In this area, WS saw large canids that strongly resembled wolves and was authorized to remove both animals. One wolf was killed at the depredation site a week later. No further depredations have been reported.

SW154M (near Ennis Lake): On Jan. 16th, while doing coyote work in the Madison Valley, MT WS darted a lone adult male black wolf near Ennis Lake. Examination determined the wolf had old injuries, apparently by other wolves. It had numerous puncture wounds in the chest, hip and head areas. It was collared and released and the signal was monitored from the ground on the 17th and was not heard in the immediate capture area. On February 2<sup>nd</sup>, while checking radio signals from the ground, FWP heard a mortality signal from the newly collared wolf SW154M in the Madison Valley. During a routine radio flight on February 10, the collar location was pinpointed. On February 16 the collar and carcass was retrieved and taken to the FWP lab in Bozeman for necropsy. When WS collared this animal on January 16, it appeared that it had been wounded in a fight with other wolves. Upon lab examination it was surmised that the wolf had previous injuries from other wolves and that its death may have resulted from an injury from a bull elk as it had a deep puncture wound in the chest that penetrated into the heart sac. The FWP vet said it could have survived many more days after this type of injury.

SW157F (near Ennis): On Jan 26th a trapper caught an adult female gray wolf in a leg hold trap in the Bear Creek area south of Ennis, MT. FWP personnel responded and collared and release the wolf. It is unknown which pack it is associated with. On September 11 this wolf was found during a radio monitoring flight several miles from the reported site. On September 16 an archery hunter found this wolf dead. FWP and USFWS enforcement retrieved the collar but could not determine the cause of death.

SW237F (north end of Gravelly Mountains): On Sept. 1st, an adult gray female wolf (SW237F; 4-5 years old weighing 90#'s) was captured by project personnel and collared near Morgan Gulch in the northern part of the Gravelly Mountains in SWMT. This wolf was not breeding. The recently radio collared wolf (SW237F) from the north Gravelly Mountains did not appear to be traveling with the North Gravelly pack and has not been relocated in the area during recent monitoring flights.

Wall Creek (south of Ennis): Two wolves were collared near the Wall Creek Management Area in the Madison Valley. Both of these wolves appeared to be dispersers and had not shown pack activity or affiliation. No depredations were reported and they were not considered a resident pack. SW073F was last heard in the area on August 29, 2006 and not found again and SW72F was last heard near the Blacktail Wildlife Management Area and seen with two other uncollared wolves late in December 2007 (see SW072F group in suspected packs in MTGYA).

## **Suspected Packs in Montana GYA**

Trail Creek area: Four to six wolves were reported in the Bullis Creek area of Paradise Valley during the hunting season. A Leopold dispersing collared female from YNP was heard in the area in November. These animals were not included in the final 2007 minimum population estimate because personnel could not verify subsequent reports. We will continue to monitor this area in 2008 to confirm wolf activity.

SW072F group: Three wolves, one of which is the collared Wall Creek disperser SW072F was located around the Blacktail / Sage Creek areas. These three wolves are included in the population estimate as lone/miscellaneous wolves. It is uncertain if this group will stay together, and it will be monitored closely in 2008.

## **Other Miscellaneous Information in Montana GYA**

Project personnel received multiple reports of suspected wolf activity in the northwest end of the Crazy Mountains (vicinity of Lennop, Martinsdale and Sixteenmile Creek). FWP talked with several landowners in the area and will investigate new reports in 2008.

## **Montana portion of the Central Idaho Experimental Area**

### **Overview**

In 2007, we documented a minimum estimate of 122 wolves in 23 packs in the Montana portion of the Central Idaho Experimental Area. This is an increase from 76 wolves in 16 packs at the end of the year in 2006. There were 8 newly identified packs in 2007, one of which was removed for livestock depredations. Some of these packs are believed to be first year packs and some are likely to have existed the previous year.

Previously verified packs that still existed in 2007 were the Battlefield, Big Hole, Black Canyon, Brooks Creek, Divide Creek, East Fork Bitterroot, Lake Como, Miner Lakes, Mt Haggin, Mussigbrod, Painted Rocks, Sapphire, Skalkaho, Sula, Welcome Creek, and Willow Creek packs. Newly documented packs in 2007 included the East Fork Rock Creek, Flint Creek, Grasshopper, Pintler, Ram Mountain, Trail Creek, and Trapper Peak packs. The Fleecer Mountain pack was also a new verified pack for 2007, but the pack was removed before the end of the year because of repeated livestock depredations. The Bearmouth pack, first documented in 2006, was removed in 2007 due to chronic livestock depredations.

The Hughes Creek pack (Idaho/Montana border pack) denned and spent the majority of their time in Idaho in 2007 and will therefore count in the Idaho population estimate. SW64M, a disperser from the Sage Creek pack east of Dillon, also counted in the 2007 Idaho estimate, although he was found in Montana on multiple occasions.

During 2007, 17 (68%) of 25 verified packs were monitored using ground and aerial telemetry at some point during the year. At the end of 2007, 13 (57%) of 23 remaining verified packs were being monitored using ground and aerial telemetry. Eleven wolves in 7 packs were captured and radio collared in the Montana portion of the CID in 2007. Four wolves were radio collared during MFWP trapping efforts and 4 were radio collared by WS. Three wolves were caught by coyote trappers and were collared and released by FWP personnel. In addition, the Nez Perce Tribe collared 4 wolves in the Big Hole pack in Idaho. Radio collared wolves were located 1-2 times per month by fixed-wing aircraft.

Nine of 23 packs monitored in the MT portion of the CID occupied the Montana/ Idaho border: Battlefield, Big Hole, Black Canyon, Brooks Creek, Lake Como, Miner Lakes, Painted Rocks, Sula, and Trapper Peak packs. The Battlefield, Big Hole, Black Canyon, Brooks Creek, and Miner Lakes packs have been verified to spend time in Idaho. The others were only suspected to spend time in Idaho, based on proximity of sightings or telemetry locations. Because these 9 packs denned in Montana, or were known to have spent most of their time in Montana, they were counted as Montana packs for 2007. MFWP conducts most of the monitoring of these packs in close coordination with IDFG and the NPT, with the exception of the Big Hole pack, which was monitored by both agencies in both states. The Hughes Creek pack spent most of its time in Idaho and was monitored primarily by IDFG.

Reproduction was confirmed in 14 packs: Big Hole, Black Canyon, Brooks Creek, Divide Creek, East Fork Bitterroot, Miner Lakes, Mussigbrod, Pintler, Sapphire, Skalkaho, Sula, Trail Creek, Trapper Peak, and Willow Creek packs. Although pups were documented in the Mussigbrod, Sapphire, and Trapper Peak packs, their survival either could not be confirmed at the end of 2007 or pups were known to have died for various reasons. For the remaining 11 packs, a minimum of 39 pups were produced and 9 packs (Big Hole, Black Canyon, Brooks Creek, Divide Creek, Pintler, Skalkaho, Sula, Trail Creek, and Willow Creek) met the breeding pair requirement. Reproductive status of the Battlefield, East Fork Rock Creek, Flint Creek, Grasshopper, Lake Como, Painted Rocks, and Ram Mountain packs was unknown.

Two dispersals were documented in 2007. SW47F dispersed from the Battlefield pack east to the Pioneer Mountains. At the end of 2007 she was believed to still be alone and was spending time in both the East and West Pioneers. Black Canyon wolf SW67M, who disappeared in August 2006, was found on the Mt Haggin game range in April 2007. He paired up with a female but did not produce pups in 2007. The pair held a territory in the Mt Haggin area at the end of the year and are called the Mt Haggin pack.

Ten packs were confirmed to have killed livestock: Battlefield, Bearmouth, Brooks Creek, Fleecer Mountain, Miner Lakes, Mt Haggin, Mussigbrod, Pintler, Sapphire and Skalkaho. Twenty-five cattle and 5 sheep were confirmed killed and 5 yearlings and 1 calf were confirmed injured. Thirty-five wolf mortalities were documented in 2007. Thirty-one wolves were killed in response to depredations: five were shot by private citizens [10(j)] and 26 were killed by WS. One wolf was killed illegally, one was hit by a car, one died due to capture stress, and one mortality cause was unknown. Two radio-collared wolves in the Sapphire pack were missing at the end of 2007.

## Verified Packs (Table 1c in Appendix 3)

### Battlefield

- 3 wolves; not a breeding pair
- 1 calf, 2 yearlings confirmed killed; 5 wolves removed by WS

*History:* The Battlefield pack formed in 2002.

*2007 Activities:* Four gray wolves were believed to be in the Battlefield pack in early 2007. A yearling heifer was killed on private land in March and 2 wolves were killed by WS shortly thereafter, including a bred female. A calf and another yearling heifer were killed in early April and 3 more wolves were killed. It is possible that some of these wolves involved in the depredations that were killed were members of the Mussigbrod pack and not the Battlefield pack, because some of the wolves were black. Wolves in the Battlefield pack had been predominantly gray. There were no collars in the Mussigbrod pack and the collared Battlefield female SW47F was not present during these depredations. She had been alone and seemed to be starting to disperse. These depredations occurred in the heart of the Battlefield pack territory however, which makes it more likely to assume Battlefield was involved. The most likely explanation may be that there was a lot of reshuffling going on with wolves in this area in the spring, which is not surprising given that both packs had members removed in 2006 due to livestock depredations. SW47F permanently left the Battlefield pack territory in the summer and has spent the rest of the year in the East and West Pioneers. In early August FWP followed up on reports of wolves in Ruby Creek, which has been traditionally used by the Battlefield pack. Tracks of at least 3 wolves were confirmed. No collaring attempts were made due to fire activity in the area. Reproductive status was unknown.

### Bearmouth

- pack removed; not a breeding pair
- 3 calves confirmed killed, 5 yearlings injured; 5 wolves removed by WS; 3 wolves killed under 10j

*History:* First confirmed in 2006.

*2007 Activities:* In early 2007, 4 wolves (2 adults, 2 pups) were thought to exist in the Bearmouth pack. In April 2007 they dened and had 6 gray pups. In August five yearlings were confirmed injured and WS found the pack's rendezvous site in the middle of a large number of cattle on public land. WS killed the alpha male and hazed the rest of the pack with the helicopter. FWP followed up and believed they had left the area. In early September a landowner shot 3 wolves (all pups) on private land under the 10j rule. Two other wolves were also shot and hit but were never found and it was unknown if they survived. The wolves had killed 2 calves at this time. FWP believed there was a good chance this event would haze the pack out of the area so no further control work was proposed at that time. However, the following day the pack killed another calf just over the hill from where the shooting and depredations had occurred the day before. FWP authorized WS to remove the rest of the pack, since the wolves appeared to be keyed into the livestock as a primary food source. The remaining 2 adults (including alpha female SW87F) and 3 pups were killed shortly thereafter.

Big Hole

- 5 adults, 5 pups; breeding pair
- no depredations reported

*History:* The Big Hole pack formed when B7 and B11 (released in 1995 as part of the original reintroduction efforts) pair bonded in 1996. B7 and B11 were translocated out of the Big Hole Valley, Montana twice, in 1996 and 1997, before settling and establishing a territory near Lolo Pass, west of Missoula. The Big Hole pack has had a continuous tenure in its home range since 1997.

*2007 Activities:* The Big Hole pack splits its time between Montana and Idaho but denned in Montana and therefore was officially counted as a Montana pack in 2007. Field work and monitoring flights were conducted by both the NPT and FWP. B7, one of the founding members of the Big Hole pack was found hit by a car near Salmon, Idaho in early January. He was estimated at 13.75 years old. He hardly had any teeth left and was scavenging road kill when he was hit. His collar gave out in 2003 and he was last seen with the Big Hole pack in 2005. B151F, who was monitored in 2006, disappeared in early 2007 and it was likely her collar failed. Efforts were made by both FWP and the NPT in Idaho to re-collar this pack. FWP personnel set traps in Montana in early summer but did not catch any wolves. The Big Hole pack had rendezvous sites in Idaho for the latter part of the summer. NPT personnel trapped in Idaho and caught and collared the presumed alpha male in July. During a monitoring flight less than a week later this male turned up dead. FWP recovered the carcass and because the wolf died within a mile of its capture location and soon after the capture, his death was presumed related to the capture. Around this same time a pup was also caught and was collared with a temporary makeshift collar built with a trap transmitter, as the pup was too small to wear a regular collar. This collar served its purpose of helping the NPT locate the rest of the pack and they collared 2 more wolves in August, a female pup (B347F) and an adult male (B348M). The NPT counted 5 pups during their field efforts. The trap transmitter collar fell off later in the fall and was retrieved. During the summer NPT personnel saw a collared gray adult wolf with a non-functioning radio collar and this wolf was seen again by FWP during a monitoring flight in December. This wolf is likely B151F, whose collar is thought to have failed earlier in the year. At the end of the year FWP counted 10 wolves (5 adults, 5 pups) in this pack from the air.

Black Canyon

- 4 adults, 4 pups; breeding pair
- no depredations reported

*History:* First confirmed in 2004.

*2007 Activities:* At the end of 2006 there were thought to be at least 2 wolves left in the Black Canyon pack after control actions had removed 3 wolves earlier that year. SW67M, who was collared in 2006 and disappeared that August, was confirmed to have dispersed and was found in the Mt Haggin area in April 2007 paired with a female. No other collars remained in the Black Canyon pack and there were few public reports until hunting season. There were numerous sightings reported by hunters during the fall in both Montana and Idaho. In November FWP personnel cut tracks of at least 6 wolves in Montana and a Forest

Service biologist counted 8 on the Idaho side, including 4 pups. No collaring attempts were made because it was late in the season.

### Brooks Creek

- 3 adults, 4 pups; breeding pair
- 3 calves confirmed killed; 2 wolves removed by WS; 1 wolf killed under 10j

*History:* The Bass Creek pack initially established in this area in 1998. After repeated conflicts with livestock on private property, the entire pack was translocated to the Spotted Bear area of the South Fork of the Flathead River where they established the Spotted Bear pack (see northwest Montana pack summaries above). The Brooks Creek pack was first documented in 2005.

*2007 Activities:* The Brooks Creek pack denned in Montana in 2005, in Idaho in 2006, and back in Montana in 2007. SW17M, who was collared in 2005, continued to be tracked through 2007. This pack was confirmed to have killed at least 3 calves in the Bitterroot Valley in June. A landowner shot 1 wolf under the 10j regulations and WS removed 2 other wolves. The pack moved their pups later in June farther from the cattle and problems ceased. Later in the year FWP counted 3 adults and 4 pups during a monitoring flight.

### Divide Creek

- 4 adults, 3 pups; not a breeding pair
- no depredations reported

*History:* First confirmed in 2006.

*2007 Activities:* After estimating 4 wolves in this pack at the end of 2006, FWP counted 5 during an aerial survey early in 2007. SW118F continued to be monitored throughout 2007 and in October three pups were counted from the air. At the end of 2007, seven wolves were seen traveling together (4 adults, 3 pups).

### East Fork Bitterroot

- at least 4 wolves (at least 1 pup); not a breeding pair
- no depredations confirmed

*History:* First confirmed in 2006.

*2007 Activities:* In early 2007 there were at least 3 adults and 3 pups in the East Fork Bitterroot pack. The collared alpha female SW115F was tracked all year and localized during denning season. In September, two adults and 3 pups were seen traveling together but by the end of the year only 4 gray wolves were seen consistently together and it could not be determined if this was a breeding pair.

East Fork Rock Creek

- at least 3 wolves; not a breeding pair
- maybe 1 confirmed calf

*History:* New in 2007.

*2007 Activities:* Sightings of gray wolves were common in the Middle and East Fork of Rock Creek during 2007. The neighboring pack, the Sapphire pack, was predominantly black and so it was suspected this was a different group. In April a calf was confirmed killed in the Middle Fork of Rock Creek and the collared wolves in the Sapphire pack were not found nearby. It was unknown at the time which wolves were involved. FWP confirmed a minimum of 3 gray wolves in this pack at the end of the year. It's possible this pack winters to the east around Garrity Mountain, as gray wolves were reported in that area later in the year.

Fleecer Mountain

- pack removed; not a breeding pair
- 2 calves confirmed killed; 3 wolves removed by WS

*History:* New in 2007.

*2007 Activities:* This pack was first documented when a newborn calf was confirmed killed in August. WS trapped and collared a gray adult female, SW232F. She had an injured right front leg she was unable to use and did not travel far for the first 2 weeks after she was released. She connected back up with 3 other uncollared wolves and another calf was confirmed killed in early September. An uncollared gray wolf was killed by WS shortly thereafter. The landowner was calving at the time and the wolves continued to hang around the ranch. A leasee on an adjacent USFS grazing allotment reported seeing these wolves harassing cattle and FWP personnel caught and chased the wolves out of the cattle on another occasion. The landowner reported one of her calves missing in one of the pastures where one of the earlier calves was killed. FWP decided to remove the remaining 3 members of the pack due to a high potential for further problems and because the wolves were continuing to key into the cattle. WS killed 2 other wolves including SW232F. The fourth wolf may have been killed but was not found.

Flint Creek

- at least 4 wolves; not a breeding pair
- no depredations reported

*History:* New in 2007.

*2007 Activities:* A landowner south of Jens reported seeing 3 wolves (1 black, 2 gray) on their property in July. FWP investigated and found some old wolf sign. Traps were set in the area but nothing was caught. Very few reports came in through the rest of year. But at the end of the year, 4 wolves were documented near Flint Creek and were involved in depredations in early January 2008.

Grasshopper

- at least 3 wolves; not a breeding pair
- no depredations reported

*History:* New in 2007

*2007 Activities:* This pack was first documented when a coyote trapper in Warm Springs near Jackson caught an adult male wolf in one of his traps in January 2007. The wolf (SW156M) was collared and released by FWP. Further monitoring found him with 2 other gray uncollared wolves. The wolves spent most of their time in the Grasshopper Valley but were also found further north on occasion in the West Pioneers, southeast of Wisdom. In April, SW156M was caught chasing cattle and was shot by a landowner under the 10j regulations. Little was known about the remaining 2 wolves until later in the year. Three wolves were documented using the Grasshopper Valley at the end of the year and are believed to be part of this same original group.

Lake Como

- at least 5 wolves; not a breeding pair
- 2 pygmy goats probable

*History:* This pack initially produced pups and was documented as a breeding pair with 5 members at the end of 2002. This pack has never been radio collared.

*2007 Activities:* Very little was known about this pack in early 2007. FWP collared two wolves in the spring southwest of Darby and thought those wolves were members of the Lake Como pack but they turned out to be a different group (see Trapper Peak pack) because tracking throughout the year revealed that they did not use the Lake Como/Lost Horse area. Meanwhile there were reports during the spring and again during the winter in the Lake Como area north to Sawtooth and Blodgett Creek. FWP prioritized this area for snow tracking work in December and consistently cut 5 sets of tracks in the area. In the fall a landowner in the Camas Creek area reported 3 wolves stalking her horses. Later in December two pygmy goats were killed in the same general area and WS thought this was a highly probable wolf depredation but a dog had disturbed the carcasses making it difficult to prove. There have been other reports of 7 wolves in the area but FWP could only confirm 5 at the end of the year. Reproductive status was unknown.

Miner Lakes

- 1 adult, 3 pups; not a breeding pair
- 1 calf confirmed killed, 1 calf probable; 1 wolf removed by WS

*History:* Confirmed in 2006.

*2007 Activities:* B191F was a dispersing wolf from the Soldier Mountain pack in Idaho and was found in the Big Hole Valley in July 2006. She paired with a male in 2006 and they dened in the Big Hole Valley in 2007 and had 3 pups. A calf was confirmed killed in July and another calf was probable. Prior to this event landowners in the same general had reported a black wolf harassing cattle on at least 2 other occasions. WS killed the uncollared



alpha male in response in early August. B191F raised the 3 pups through the end of the year and continued to spend time in both Idaho and Montana.

#### Mt. Haggin

- 2 adults, 0 pups; not a breeding pair
- 1 calf confirmed killed

*History:* New pair documented in 2007. It is unknown whether the uncollared female is related to the original Mt Haggin pack.

*2007 Activities:* Wolf activity has been documented in the Mt Haggin area for numerous years but little has been known about these wolves because there were no collars. In April 2007 FWP found missing Black Canyon wolf SW67M on the Mt Haggin Wildlife Management Area. One calf was confirmed killed on the WMA in July and SW67M was found nearby. FWP personnel spent 2 weeks in the area in July tracking this wolf and trying to haze him out of the cattle. He was found paired up with an uncollared female but their movements were not localized and no pups were found. No further depredations occurred and during monitoring flights later in the year FWP saw only the 2 gray adults.

#### Mussigbrod

- 3 wolves; not a breeding pair
- 4 calves confirmed killed; 3 wolves removed by WS

*History:* First confirmed in 2006.

*2007 Activities:* The Mussigbrod pack was believed to consist of at least 6 wolves in early 2007. A calf was confirmed killed in March. At this time there were other depredations in March and April further south in traditional Battlefield territory and wolves were killed in that area in response. Some of these wolves may have been from the Mussigbrod pack (see Battlefield narrative). During the summer there were few reports but in the fall an FWP biologist saw 2 black wolves while bird hunting. Numerous other reports came in during the hunting season but it was too late in the year to trap/collar. In late December three calves were confirmed killed and WS killed 3 wolves two days later, including 1 pup. Three other wolves were seen nearby. Depredations persisted in early January 2008 and FWP authorized WS to remove the rest of the pack.

#### Painted Rocks

- at least 2 wolves; not a breeding pair
- no depredations reported

*History:* Wolf activity was initially documented in the Painted Rocks area (West Fork of the Bitterroot River near the Montana/Idaho border) with the location of dispersing Idaho female B67 in this area in 2001. B67 was monitored through 2002, and the pack has not contained a radio-collared individual since.

*2007 Activities:* At least 4 wolves were thought to comprise the Painted Rocks pack at the beginning of 2007. MFWP personnel scouted the West Fork of the Bitterroot several times during the summer and found old wolf sign, but nothing fresh enough to warrant a capture effort. Through a combination of summer field work and snow tracking FWP could only

confirm that a minimum of 2 wolves were using the area at the end of 2007, though there are likely more.

#### Pintler

- 3 adults, 3 pups; breeding pair
- 1 calf confirmed killed

*History:* New pack in 2007 though likely present in 2006.

*2007 Activities:* There were reports of wolf activity in the Fishtrap and Mud Creek drainages in 2006 though it was uncertain at that time whether or not it was the Mussigbrod pack. FWP trapped in the area in July 2007 and collared an adult gray breeding female. A calf was confirmed killed in the area in late August and the Pintler pack was believed responsible. Landowners reported seeing a collared gray wolf in the area. At the end of the year, FWP counted 3 adults and 3 pups in this pack.

#### Ram Mountain

- At least 5 wolves; not a breeding pair
- no depredations reported

*History:* New pack in 2007 though likely present in 2006.

*2007 Activities:* In fall 2006 wolf activity was reported consistently near the upper main stem of Rock Creek. The Sapphire pack has been known to use part of the main stem of Rock Creek around the Stony Creek area before and the Willow Creek has been known to use an adjacent area as well. However, neither pack was found in this area when the wolf activity was reported and documented by FWP and WS. Reports were scarce in the spring and during the summer most of the area was closed to the public due to fires. In the fall, FWP initiated a trapping effort after a cow was found hung up in a fence and dead. It was unknown whether wolves or something else had chased the cow into the fence but wolf sign was found in the area and traps were set. No wolves were caught and traps had to be pulled at the beginning of rifle season. Five gray wolves were believed to inhabit this area at the end of 2007.

#### Sapphire

- At least 4 wolves; not a breeding pair
- 2 calves confirmed killed; 5 wolves removed by WS; 1 illegal mortality

*History:* First confirmed in 2001.

*2007 Activities:* Fourteen wolves (13 black and 1 gray) were estimated in the Sapphire pack in early 2007, at least four of which were pups. SW45F, collared in 2005, disappeared over the winter and was believed to have dispersed. SW84F, collared in 2006, was likely illegally killed sometime in late winter. Her collar was found cut off in Rock Creek in April. That left one collared wolf, SW83M, in the pack. In May, WS trapped and radio collared 2 more wolves: an adult gray male (SW183M) and a black yearling female (SW184F). SW183M was never found with the rest of the pack during the month he was tracked and he was likely

not associated with the Sapphire pack. His collar slipped in late June. FWP saw 6-7 black pups from the air in mid-June. Around this same time, SW45F reappeared and she was tracked with the rest of the pack until November, when she disappeared again. Defenders of Wildlife funded a range rider program on the affected ranch during the course of the summer (see range rider section under Research and Field Studies). A calf was confirmed killed in late July and one wolf was killed by WS returning to the carcass. In September another calf was confirmed killed and the pack was located nearby. Four wolves were killed by WS including a breeding female and 3 pups. By the end of the year SW184F disappeared and is thought to have dispersed. There should have been at least 3 pups left in the pack and up to 6 adults. However only 4 black wolves were seen consistently traveling together at the end of the year (including SW83M) and it is unknown whether the others are still present.

### Skalkaho

- 4 adults, 5 pups; breeding pair
- 1 calf confirmed killed; 1 wolf removed by WS

*History:* Confirmed in 2005 but likely present in 2004.

*2006 Activities:* The status of the Skalkaho pack was unknown in early 2007. One collared wolf was illegally killed in late 2006 and 2 other collared wolves had gone missing. Very few sightings were reported over the winter. In the spring, the Skalkaho pack reappeared and killed a calf on private property. WS collared a yearling male (SW196M) and removed the alpha female. The pack moved to higher elevations during the summer and no other conflicts were reported. In July a FWP biologist doing an elk survey incidentally saw the pack from the air and counted 5 pups. In early December, a coyote trapper caught 2 male pups and FWP collared and released them both (SW269M, SW270M). At the end of the year 9 gray wolves were seen traveling together (4 adults and 5 pups).

### Sula

- 10 wolves (at least 3 pups); breeding pair
- no depredations reported

*History:* Confirmed in 2005 but likely present in 2004.

*2007 Activities:* Seven wolves were believed to comprise the Sula pack at the beginning of 2007. The pack localized during denning season, but no pups were counted until later in the year. We continued to monitor radio-collared wolf SW20M throughout the year and in December saw a minimum of 10 wolves in this pack, including 3 pups.

### Trail Creek

- 3 adults, 3 pups; breeding pair
- no depredations reported

*History:* New pack in 2007 though likely present in 2006.

*2007 Activities:* A hiker reported accidentally walking into this pack's rendezvous site near the East Fork Bitterroot/Big Hole divide in August. FWP followed up and counted 3 gray adults and 3 gray pups. Trapping efforts were initiated soon thereafter but were thwarted by a fire that broke out very close to the trapline. Traps were pulled without any captures and the wolves moved on. This pack is believed to use the Trail Creek area as well as the southwest part of the East Fork including Tolan Creek.

#### Trapper Peak

- 2 wolves; not a breeding pair
- no depredations reported

*History:* Wolf activity was documented in this area in 2006 but was not verified as distinct from the Lake Como pack until 2007.

*2007 Activities:* Wolf activity was confirmed in the Tin Cup Creek area in 2006 but was believed to be the uncollared Lake Como pack. In spring of 2007 wolf sign was again confirmed in the Tin Cup area. A landowner south of Darby reported wolves on their property in April and FWP set traps in the area, near Chaffin Creek. Two wolves were captured and collared, a yearling female (SW170F) and a lactating adult female (SW176F). Wolf sign in the area indicated a pack of at least 5 wolves. This pack localized and 2 black pups were seen from the air in early July. This pack held a small home range throughout the rest of the year, southwest of Darby and it was determined they were distinct from the Lake Como pack. In September several people reported an injured collared black wolf dragging its hind end near Rye Creek. FWP investigated and did not find either collared wolf very close to where this injured wolf was sighted. A week later, SW176F turned up dead during a monitoring flight. Her carcass was recovered and was very emaciated and was likely the wolf reported the week before. SW176F was sent to the lab in Bozeman and is still pending necropsy. At the end of the year only 2 wolves (SW170F and an uncollared gray adult) were seen consistently together. FWP also snow tracked the area and only cut tracks of 2 wolves in December.

#### Welcome Creek

- 4 adults, 0 pups; not a breeding pair
- no confirmed depredations

*History:* First confirmed in 2006.

*2007 Activities:* In early 2007, 4 wolves were thought to exist in the Welcome Creek pack. A rancher grazing his cattle on Plum Creek land in the Woodchuck area thought he may have had a calf killed in July but nothing remained to investigate. At the same time a logger reported consistent wolf tracks nearby on a skid trail he was working. FWP set traps and collared a gray yearling female (SW218F). After the wolf was released FWP spent several days in the area looking for the wolf but she could not be found. At this same time the airspace closed due to fires in the area and so the area could not be flown. When the airspace reopened in the fall, FWP searched for SW218F several times and still could not find her. Finally in November she was located and was tracked for the remainder of the year. Four

gray adult wolves were seen consistently from the air in December but no pups appeared present.

#### Willow Creek

- 5 adults, 5 pups; breeding pair
- 1 calf confirmed injured

*History:* First confirmed in 2005 with the dispersal of B142M from the Buffalo Ridge pack near Challis, Idaho. This pack is likely not related to the original Willow Creek pack.

*2007 Activities:* In early 2007, 5 wolves (4 adults, 1 pup) were thought to exist in the Willow Creek pack. Collared wolves B142M and SW82F continued to be tracked through 2007. The pack's den site and rendezvous sites were on private land near cattle and FWP made numerous efforts during the summer to haze the wolves out of the area. The wolves did not move far but no depredations were confirmed until October when a calf was confirmed injured after it was brought down off the forest. At the end of the year 10 gray wolves were seen from the air: 5 adults (including collared wolves B142M and SW82F) and 5 pups.

### **Verified Border Packs Counting in Idaho Population Estimate (Table 3 in Appendix 3)**

#### Hughes Creek

*History:* First documented by IDFG in 2005.

*2007 Activities:* See 2007 Idaho Annual Report.

### **Miscellaneous / Lone Individuals in Montana CID**

SW64M: This male wolf, originally dispersed from the Sage Creek pack east of Dillon, continued to spend time on the Continental Divide southwest of Dillon in 2007. He was found more often in Idaho than Montana and therefore counts in Idaho population estimates for 2007. At the end of the year, SW64M was paired with an uncollared female. They may have been responsible for some depredations that occurred in the Big Sheep Creek area in 2007, but agency personnel could not confirm which wolves were involved. Three calves and 5 buck sheep were confirmed killed in the area during the year.

### **Suspected Packs in Montana CID**

There are several areas where MFWP suspected or verified wolf activity, but did not have enough information to verify whether new packs were present. These areas will potentially be explored in 2008:

Alder Peak: There were numerous reports of wolf activity around the Alder Peak area in the West Pioneers. A fire in this area during the summer precluded FWP from investigating.

Watchtower Creek: There were a number of reports in the Nez Perce/Watchtower and Boulder Creek drainages and wolf sign was confirmed in these areas. But it is unknown whether this pack is distinct from the Painted Rocks pack.

Roaring Lion: IDFG documented a wolf pack around the Moose Lake area just across the Montana border in Idaho. But it is unknown whether this pack is distinct from Lake Como.

### **Other Miscellaneous Information in Montana CID**

Nothing to report.

## **OUTREACH AND EDUCATION**

MFWP's wolf program outreach and education efforts are varied, but significant. Outreach activities take a variety of forms and include: meeting people in the field, visiting landowners on their ranches, phone conversations and email to share information and answer questions, and granting interviews with the media, writers, and others. MFWP wolf staff also gave presentations at organized functions. MFWP also prepared and distributed a variety of printed outreach materials and media releases to help Montanans become more familiar with the Montana wolf population, the state's plan, and the current federal regulations. During the course of the year, MFWP staff note most their outreach efforts and activities in the USFWS Wolf Weekly report.

Other MFWP staff and volunteers are instrumental in accomplishing MFWP's outreach efforts. These include area game wardens, area wildlife biologists, block management personnel, information officers and front desk staff, staff of the Education Bureau, State Parks employees, the Helena staff (who work closely with the MFWP Commission, the legislature, and a variety of other elected or appointed officials), hunter education instructors, etc.

An important specific initiative in 2006 was the redesign of the wolf pages on the MFWP website. In 2007, periodic updates were made. The pages were updated with new information on a variety of subjects with respect to wolf conservation and management in Montana. In February, MFWP launched an application for the public to log on and view flight reports. The wolf report application continued to bring valuable information from the public. Wolf reports help MFWP monitoring existing packs and documenting wolf activity in new areas. See [www.fwp.mt.gov/wildthings/wolf](http://www.fwp.mt.gov/wildthings/wolf).

A wide variety of media requests are received, ranging from daily newspapers, magazines, documentary filmmakers, and authors. Additionally, the MFWP website receives email comments and questions from a wide variety of interested publics. Efforts are made to respond to as many as possible, which to date has been all.

A feature-length documentary was released late in 2007, Wolves in Paradise. This film is one of the first to tell the story of the challenges and opportunities of wolf conservation and management outside national park settings in the northern Rockies. It chronicles a traditional ranching operation in the Paradise Valley and compares it with a non-traditional ranching operation in the Madison Valley. It highlights the common ground and overlapping interests of conservationists and ranchers in protecting open space and finding ways to have livestock and wolves on the Montana landscape. This documentary was a co-production of Homefire Productions (Bill Campbell, Livingston, MT), the Independent Television Service, and KUSM / Montana PBS, with funding provided by the Corporation for Public Broadcasting, Montana Committee for the Humanities, and The Greater Montana Foundation. A community screening of the film in Bozeman was followed by a panel / audience participation event. Attendees gained valuable insights. A benefit of such community events about wolves, wolf recovery and management is that a deeper appreciation of the true challenges and opportunities of integrating wolves into the Montana landscape develops. Additionally, it continues the grassroots conversations among Montanans that started with the original Wolf Advisory Council in 2000.

The most significant outreach occurs on a daily basis when project personnel are meeting people in the field and answering phone calls or email inquiries. This informal outreach is not recorded here. In addition to the field contacts, MFWP wolf staff gave many more formal presentations throughout the year to a variety of groups. A minimum of 47 presentations were given to about 2,100 in 2007. When broken down by category, the majority of presentations were made to other agency/government professionals and landowner / livestock interests. However, no single group or setting dominated our efforts, as shown below.

Outreach Categories:

Civic: Kiwanis Club, Rotary Club, Lions Club, etc.

Teacher/school: K-12, teachers

College/Professional: colleges, conferences, and adult education

Hunting: hunting, check stations, outfitting, road and gun, etc.

Landowner / Livestock: livestock groups, permittees, watershed groups, etc.

Agency/government: Forest Service, BLM, NPS, county, Montana Legislative Committees, etc.

<u>Outreach Categories</u>	<u># of Programs</u>	<u>Number of public</u>
Civic	7 (15%)	343 (16%)
Teacher/school	3 (6%)	200 (10%)
College/professional	8 (17%)	525 (25%)
Hunting	3 (6%)	160 (7%)
Landowners / Livestock	15 (32%)	477 (23%)
Agency/government	11 (24%)	395 (19%)
<hr/>		
Total:	47 (100%)	2100 (100%)

## RESEARCH, FIELD STUDIES, AND PROJECT PUBLICATIONS

### *Gradients of predation risk affect distribution and migration of a large herbivore.*

*Investigator:* Jamin Grigg, Department of Ecology, Montana State University, Bozeman, MT 59717.

*Abstract:* Few studies have placed wildlife behavioral responses to human disturbance and hunting pressure within the larger ecological context of predator-prey theory. Given that large herbivores respond behaviorally to the presence of wolves and other predators, we should expect similar adaptive behavioral responses when large herbivores are presented with risk in the form of human disturbance and hunting pressure. One index of human access, disturbance, and thus potential predation risk to large herbivores from hunters are road and trail networks bisecting large herbivore ranges. I evaluated the effects of human disturbance and predation pressure in the forms of motorized and total combined access networks on elk (*Cervus elaphus*) summer home range size, timing of fall migration, and movement rates by placing 49 GPS radio-collars on adult female elk on a winter range in the Madison Valley, MT over the course of a two-year study. I found evidence that elk responded to motorized access during the summer by increasing summer home range size. Further, regional variation in predation risk from human hunters resulted in elk subjected to the highest levels of hunting pressure initiating fall migration from summer ranges to winter ranges earlier than elk subjected to lower levels or no hunting pressure. These winter ranges are mostly privately-owned ranchlands that provide relative refuge from hunting pressure. All elk in this study summered on public lands, yet most elk summering in heavily hunted regions were unavailable to public-land hunters for large portions of the hunting seasons due to early fall migration patterns. Movement rate models were ambiguous and I was unable to detect differences associated with motorized and total access levels, though movement rates during the hunting seasons were correlated with varying regional predation risk. This research potentially provides valuable knowledge to biologists across the western United States managing large herbivore populations that summer on public lands and winter in privately-owned agricultural valleys, and provides insight into general predator-prey behavioral relationships.

### Recent project publication:

Grigg, J. 2007. Gradients of predation risk affect distribution and migration of a large herbivore. Master's thesis, Montana State University, Bozeman, MT 59717.

### *Expanding the Use of Time of Death Determination Parameters to Carnivores: A Two Part Project*

*Investigator:* F. Carleen Gonder, University of Montana; Masters of Interdisciplinary Studies: Criminology and Forensic Anthropology (Wildlife Forensics); (406) 244-0007; [carleen\\_montana@yahoo.com](mailto:carleen_montana@yahoo.com).



*Sponsor* Numerous individuals and organizations have contributed to this project, but primary sponsor is the Association of Midwest Fish and Game Law Enforcement Officers. Material from this project will appear in their field manuals.

*Purpose:* Law enforcement investigators have long understood the importance of time of death determinations, both short term or during the initial 24 hours postmortem, and long term by understanding the various stages of decomposition. The focus of this project is on decomposition. Eight wolves, four mountain lions, two black bears and a whitetail deer are now in the dry stage of decomposition. Due to their availability, wolves have become a control for documentation of seasonal variation. A time lapse photo essay is being prepared in manual format that will have a corresponding overlay of predominant insects associated with the various decomposition stages which are indicators for time of death. Included in this manual will be insect collection protocols for forensic entomological purposes, specific to wildlife and the intermountain west and mid west regions. Plans are underway to continue this decomposition project over a period of several years to introduce new variables and gather comparable data for several wildlife species.

*Project Activities:* On 19 June 2006, two wolves were placed for decomposition in an electrified enclosure. Their carcasses remain relatively intact and preserved due to mummification. On 15 Sept. two wolves and a black bear were placed in a second enclosure and they are mummified. A black bear was placed 28 Oct., and three mountain lions and a whitetail deer were placed 22 Nov. Two wolves were placed 1 Dec and another lion on 11 Jan. 2007. Two additional wolves were placed 4 April. All carcasses are at the dry decomposition stage. Though the focus of this project is on carnivores, the addition of the deer sets the stage for long term wildlife decomposition study.

Due to their availability, wolves will provide seasonal variation for one species. Two yearling females were placed mid June (summer). The weather remained hot and dry for most of the summer. Within two weeks of placement their hides were nearly mummified, with little underlying tissue. Two adult females were placed mid September (fall). While temperatures remained warm, there was slightly more precipitation. This resulted in delayed carcass drying. They are now at the dry stage. The summer and fall wolves are well preserved due to mummification. Two adult males were placed early December (winter), and remained static for several months. They are now at the dry stage. Two wolves were placed in April (spring) with increased amounts of moisture in the form of rainfall and higher relative humidity, compared to the other 3 seasons. While the spring wolves are currently in the dry stage, they are exhibiting decomposition characteristics not observed in the wolves placed in the three previous seasons, such as significant amounts of exposed skeleton. This is due to higher overall moisture resulting in delayed carcass drying which promoted an increase in insect activity.

One cub-of-the-year black bear was placed on bare ground on 28 October. The carcass had been frozen but was fully thawed at the time of placement. Last fall it had undergone numerous freeze/thaw cycles, and remained static after snowmelt this spring for well over one month. Three fresh (unfrozen) yearling lions and one whitetail deer were placed on bare ground 22 November during an active snow storm and were fully covered the following day. They

remained snow-covered until spring. The yearling lions were possibly insulated from freezing until after snowmelt. Two frozen adult male wolves were placed on snow 1 December and remained frozen until spring. One frozen adult male lion was placed 11 January on top of snow and it, too, remained frozen until spring. UM graduate student Laura Wagster has conducted an analysis of freeze-thaw affects on the summer and fall wolf carcasses in an attempt to determine a relationship to human remains.

A time lapse photo essay is being prepared in field manual format that will have a corresponding overlay of predominant insects associated with the various decomposition stages which are indicators for time of death. Included will be insect collection protocols for forensic entomological purposes, specific to wildlife and the intermountain west and mid west regions. This material will be published in the Wildlife Forensic Field Manual. A forensic entomology analysis is being conducted by Gregory Johnson, Ph.D (Montana State University) of the insects collected by C. Gonder from the summer and spring wolves.

### *Range Rider Projects in Southwest Montana*

*Collaborators:* Montana Fish Wildlife & Parks, Madison Valley Ranchlands Group, Boulder Watershed Association, individual livestock producers, Turner Endangered Species Fund, USDA Forest Service, Keystone Conservation, USDA Wildlife Services, USDA Natural Resources and Conservation Service, Sweet Grass County Conservation District, and MSU Extension Service.

The Range Riders Project is a collaborative effort between ranchers, government agencies, and conservationists. The primary goal of these efforts is to reduce livestock/predator interactions. Secondary goals and objectives are to reduce livestock depredation from predators, to detect injured or dead livestock more rapidly, to preserve the evidence and increase the likelihood that an investigation would yield a definitive conclusion about whether or not it was a predation event and the species responsible, to improve livestock management and range conditions, to increase knowledge about livestock/predator interactions in space and time, and to build relationships among project partners. All project collaborators provided funding and in-kind contributions. In particular, significant funding was provided through the Natural Resources and Conservation Service's Environmental Quality Incentives Program and Keystone Conservation.

Range Rider projects were implemented in 2004, 2005, 2006, and 2007 on a combination of public grazing allotments and private lands in a variety of settings in the Madison Valley south of Ennis and in the Boulder River Valley south of Big Timber. Although the rider protocols varied from place to place, the underlying premise is similar: increased and continual human presence and immediate response to wolves that are interacting with livestock. The rider response towards wolves when they are interacting with livestock ranges from non-lethal harassment to a lethal bullet. By responding as closely as possible in space and time to the inappropriate behavior (e.g., chasing livestock), the wolves are more likely to associate that behavior with something negative than if they had not been harassed while behaving inappropriately.

Even though the rider(s) are out day and night, cattle on public grazing allotments and in some circumstances on private lands are dispersed across a wide area. Livestock may also be in rugged, partially forested terrain. Nonetheless, use of horses and vehicles (where applicable) allows the rider to cover as much ground as possible while checking on livestock. There is still a good chance they will not be in exactly the right location at the exactly the right time to respond to the wolves. However, the chances of preventing a depredation are expected to be better than when/where human presence is more limited or infrequent.

Due to the incredible number of variables from place to place, there is no clear evidence that these efforts have actually prevented depredations. However, when surveyed, many participating producers said they thought it was helpful and indicated an interest in continuing their participation. Efforts to collect information to better understand the effectiveness of this technique continued in 2007.

The fourth field season of the Range Riders project in the Madison occurred in 2007. This year was the third field season in the Boulder. There were a total of 4 riders (2 in Boulder drainage, and 2 in Madison drainage). The riders in the Madison were out from June 15 - October 15, and the riders in the Boulder were out from June 1 - October 30th. They were each paid \$2,000 a month – Keystone Conservation covered all costs in the Madison, and put in \$5,000 for riders in the Boulder.

There was one confirmed depredation in the Madison Valley, after livestock were removed from the project site in the fall of 2007. There were no confirmed or probable depredations in the Boulder Valley. No missing livestock were reported and attributed to wolf kills in either project area. In the Madison, the riders reported seeing the Horn Mountain pack numerous times on the public grazing allotment, and assisted FWP in collaring and tracking the pack. The Madison Valley riders chased wolves away from cattle on horseback, but did not use less than lethal munitions.

In the Boulder, the riders encountered six individual wolves that they associated with either the Baker Mountain pack or Moccasin Lake pack. They did not have the opportunity to use any less-than-lethal munitions. The Boulder project was primarily on private land this year because forest fires in 2006 closed livestock grazing allotments in the Gallatin National Forest. The riders encountered a lot of sign and tracks of wolves, as well as both black and grizzly bears.

FWP collaborated on another Ranger Rider project with Defenders of Wildlife and a livestock producer in the Rock Creek drainage east of Missoula. This producer experienced missing livestock in 2006, and FWP monitoring efforts suggested that the Sapphire pack was large (14 wolves at the end of 2006). The rider started in May, 2007 and spent time both on private land and the affiliated public grazing allotment through September. No 10j hazing or take in the act was reported by the rider, but there were two calves were killed on private land during 2007 (one in July and another in September). Due to repeated visitation of members of this pack to private lands (this ranch and others) in close proximity to livestock, 5 wolves were removed from the pack and 1 wolf was killed illegally. At least four wolves remained in the pack at the end of 2007. The producer registered satisfaction with the Range Rider project and is expected to participate again in during 2008.

*Estimation of Successful Breeding Pairs for Wolves in the Northern Rocky Mountains, USA*

*Investigators:* Dr. Michael Mitchell, U. S. Geological Survey, Montana Cooperative Wildlife Research Unit; David E. Ausband, Montana Cooperative Wildlife Research Unit; Carolyn A. Sime, Montana Fish, Wildlife & Parks; Edward E. Bangs, U.S. Fish and Wildlife Service; Justin A. Gude, Montana Fish, Wildlife & Parks; Michael D. Jimenez, U.S. Fish and Wildlife Service; Curt M. Mack, Wolf Recovery Project, Nez Perce Tribe; Tomas J. Meier, National Park Service; M. Steven Nadeau, Idaho Department of Fish and Game; and Douglas W. Smith, National Park Service.

*Abstract accepted for publication:* Under the Endangered Species Act, documenting recovery and federally mandated population levels wolves (*Canis lupus*) in the northern Rocky Mountains (NRM) requires monitoring wolf packs that successfully recruit young. United States Fish and Wildlife Service (USFWS) regulations define successful breeding pairs as packs estimated to contain an adult male and female, accompanied by  $\geq 2$  pups on 31 December of a given year. Monitoring successful breeding pairs will become more difficult following proposed delisting of NRM wolves; alternatives to historically intensive methods, appropriate to the different ecological and regulatory context following delisting, are required. Because pack size is easier to monitor than pack composition, we estimated probability a pack would contain a successful breeding pair based on its size for wolf populations inhabiting 6 areas in the NRM. We also evaluated the extent to which differences in demography of wolves and levels of human-caused mortality among the areas influenced probability packs of different sizes would contain successful breeding pairs. Probability curves differed among analysis areas, depending primarily on levels of human-caused mortality, secondarily on annual population growth rate, and little on annual population density. Probabilities packs contained successful breeding pairs were more uniformly distributed across pack sizes in areas with low levels of human mortality and stable populations. Large packs in areas with high levels of human-caused mortality and high annual growth rates had relatively high probabilities of containing breeding pairs whereas those for small packs were relatively low. Our approach can be used by managers to estimate number of successful breeding pairs in a population where number of packs and their sizes are known. Following delisting of NRM wolves, human-caused mortality is likely to increase, resulting in more small packs with low probabilities of containing breeding pairs. Differing contributions of packs to wolf population growth based on their size suggests monitoring successful breeding pairs will provide more accurate insights into population dynamics of wolves than will monitoring number of packs or individuals only.

*Internal Validation of Predictive Logistic Regression Models for Decision-making in wildlife management.*

*Investigators:* Justin A. Gude, Montana Fish, Wildlife & Parks; Michael Mitchell, U.S. Geological Survey, Montana Cooperative Wildlife Research Unit; David E. Ausband, Montana Cooperative Wildlife Research Unit; Carolyn A. Sime, Montana Fish, Wildlife & Parks; Edward E. Bangs, U.S. Fish and Wildlife Service.

*Abstract submitted for publication:* Predictive logistic regression models are commonly used to inform decisions related to wildlife management and conservation. Examples include predicting favorable wildlife habitat for land conservation objectives and predicting vital rates for use in population models. Often such models are developed for use in the same population from which sample data were obtained; they are intended for “internal” use. Before using a logistic regression model for this purpose, the predictive ability of the model should be validated. We describe a process for conducting an internal validation. We start by defining the major components of accuracy for binary predictions as calibration and discrimination, and we describe methods for assessing the calibration and discrimination abilities of a logistic regression model. We also describe methods for correcting problems of calibration in a logistic regression model. We then show how the bootstrap can be used to obtain honest estimates of predictive accuracy in the population underlying the sample data. We also show how the bootstrap can be used to assess coverage rates and re-calibrate the endpoints of confidence intervals for predictions from a logistic regression model in order to achieve nominal coverage rates. We illustrate the process of internal validation using logistic regression models for predicting the number of successfully breeding wolf packs in the northern Rocky Mountains. Managers need to know the number of successfully breeding wolf packs in order to document the recovery and population status of wolves in the region, as dictated by federal and state management plans. Therefore the example has direct management applications, and we validate that logistic regression predictions will be reliable in this situation. The validation methods we present, while useful for logistic regression, can also be applied to any prediction method that is based on data, either directly or with modification. We believe that predictive accuracy should be validated before any model is used to inform wildlife management and conservation decisions, regardless of how the model was selected or developed. This will increase the odds that management decisions will achieve management goals.

*Dog Lice (Trichodectes canis) on wolves in Montana and Idaho.*

*Investigators:* Michael D. Jimenez, U.S. Fish and Wildlife Service; Edward E. Bangs, U.S. Fish and Wildlife Service; Mark Drew, Idaho Wildlife Health Laboratory; Steven Nadeau, Idaho Fish and Game; Val J. Asher, Turner Endangered Species Fund; Carolyn Sime, Montana Fish, Wildlife and Parks.

*Abstract submitted for publication:* We found dog lice (*Trichodectes canis*) on 5 wolves (5 pups) in 1 wolf pack in Montana in 2005 and 2006, and on 9 wolves (5 adults, 3 yearlings, and 1 pup) in 8 different packs from Idaho in 2006 and 2007. Lice were not detected on all members of the pack once a pack member was diagnosed with lice. Lice infestation may have contributed to higher morbidity in individual wolves, but was not a significant cause of wolf mortality.

*Sarcoptic mange found in wolves in the Rocky Mountains in western United States*

*Investigators:* Michael D. Jimenez and Edward E. Bangs, U.S. Fish and Wildlife Service; Carolyn Sime, Montana Fish, Wildlife, & Parks; Valpa J. Asher, Turner Endangered Species Fund.

Abstract submitted for publication: We documented sarcoptic mange (*Sarcoptes scabiei*) in wolves (*Canis lupus*) in the Northern Rocky Mountain (NRM) states of Montana (MT) and Wyoming (WY), from 1995 through summer 2007. Mange was identified in wolves from MT and WY, primarily east of the Continental Divide. Statewide in MT, we recorded mange in: 3% of 33 packs in 2003, 12% of 33 packs in 2004, 31% of 35 packs in 2005, 7% of 60 packs in 2006, and 4% of 71 packs in 2007, but all infected packs were in southwest Montana (SWMT) north of Yellowstone National Park (YNP). In addition, one wolf in northwest MT (NWMT) was confirmed to have mange in 1995 and another in 2005. In WY (including YNP), mange-infected wolves were found in: 5% of 22 packs in 2002, 8% of 26 packs in 2003, 12% of 26 packs in 2004, 3% of 29 packs in 2005, 9% of 40 packs in 2006, and 15% of 33 packs in 2007. Mange was first documented in YNP in 2006 and in Grand Teton National Park (GTNP) in 2007. We did not detect mange in all members of every pack once a pack member was found with mange. No mange was documented in Idaho. We documented individual wolves that recovered from infestations. We predict that sarcoptic mange infestation in the NRM will progress as it has in other parts of North America by affecting local wolf packs in episodic fashion and will not threaten regional wolf population viability. Since 1995, numerous individual wolves have died or were euthanized due to mange-related conditions and some wolf packs in specific areas have been affected. But the overall wolf population in the NRM was not negatively impacted by mange, and the population continued to increase 10-20% annually to an estimated 1300 wolves in September 2007. If the NRM wolf population was dramatically reduced, mange epizootics may play a more significant role in wolf population status in the future when combined with other mortality factors.

Gray Wolves and Livestock in Montana: a Recent History of Damage Management

*Investigators:* Carolyn A. Sime, Montana Fish, Wildlife & Parks; Edward E. Bangs, U.S. Fish and Wildlife Service; Elizabeth Bradley, Montana Fish, Wildlife & Parks; John E. Steuber, Kraig Glazier, and Paul J. Hoover, USDA Wildlife Services; Val Asher, Turner Endangered Species Fund; Kent Laudon, Mike Ross, and Jon Trapp, Montana Fish, Wildlife & Parks.

*Abstract to be published in conference proceedings:* The Montana gray wolf population grew from 2 wolves in 1979 to a minimum of 316 by late 2006. Resolving conflicts, both perceived and real, between wolves and livestock was a dominant social issue for the federal recovery program, and it remains so today. The U.S. Fish and Wildlife Service and now Montana Fish, Wildlife & Parks work with USDA-APHIS-Wildlife Services to reduce depredation risks and address wolf-related conflicts through a combination of non-lethal and lethal management tools. The number of wolf complaints investigated from 1987-2006 increased as the population increased and expanded its distribution into Montana after reintroduction into Yellowstone National Park and central Idaho in 1995/96. Montana wolf packs routinely encountered livestock, though wolf depredation was a relatively rare cause of livestock death and difficult to predict or prevent. Cattle and sheep were killed most often from March to October, although losses were confirmed each month. From 1987-2006, wolves killed 230 cattle and 436 sheep. However, confirmed losses probably represent a fraction of actual wolf losses. Few other types of livestock classes were killed. Conflicts are addressed on a case-by-case basis, striving to

connect the agency response to the damage in space and time and to decrease the potential for future losses. Lethal control is implemented incrementally after predation was verified, and 254 wolves were killed from 1987–2006. Only complete removal of either wolves or livestock eliminates the potential for wolf depredation. The continued presence of a viable wolf population requires that a wide variety of non-lethal and lethal tools be investigated and implemented. That combination will also be required to maintain local public tolerance of wolves where the two overlap and to foster broad public acceptance of techniques used to minimize conflicts. Resolving wolf-livestock conflicts at a local scale is but one component of a larger state wolf conservation and management program. Upon delisting, regulated public harvest will allow us to more proactively manage the population.

*Application of Electrified-Fladry to Decrease Risk of Livestock Depredation by Wolves in Montana.*

*Investigators:* Carolyn A. Sime, Montana Fish, Wildlife & Parks; Nathan Lance, Utah State University and USDA Wildlife Services Research Section; John Shivik and Stewart Breck, USDA Wildlife Services Research Section; John Steuber, USDA Wildlife Services Montana State Office; Stacy Courville, Confederated Salish and Kootenai Tribes.

*Abstract:* Wolf (*Canis lupus*) predation on livestock can cause economic hardships for livestock producers, resulting in increased animosity towards wolves and complicating the balance between wolf conservation and human interests. Because gray wolves are given special federal and state protection, regulations limit the ability of livestock owners and wildlife managers to address wolf depredation on livestock. More tools are needed that prevent conflict, thus the objective of this project was to further develop and test a deterrent tool to reduce livestock depredation by wolves. Electrified-fladry is an electrified rope barrier with suspended flagging that shows particular promise as an effective tool for keeping wolves out of smaller size pastures. We completed a pen study that demonstrated the effectiveness of electrified-fladry in preventing captive wolves from accessing food resources. To learn more about the applicability of this tool in a field setting and the efficacy in reducing wolf use of pastures and preventing depredations, we performed a field test of electrified-fladry in Montana. We identified twelve cattle pastures on nine ranches with a history of wolf depredations. Six pastures received electrified-fladry to protect 40-160 acre calving pastures, and six did not. Electrified-fladry was installed during critical calving times (February-June) when calves are vulnerable to predation. All ranches and pastures were monitored for cattle depredation and wolf activity using track plots and radio-telemetry. In addition, we studied the willingness and interest of livestock producers for integrating electrified-fladry into their operations. We recorded information about installation and maintenance time and costs and surveyed all project participants to learn about their experiences, beliefs and attitudes regarding the usefulness of electrified-fladry. Electrified-fladry was implemented and surveys were distributed in 2007. Data collection was completed in 2008. Analysis and publications will be completed in 2008.

*Other Project Collaborators and Principals:* U.S. Forest Service, Gallatin National Forest, Big Timber; Boulder Watershed Group; participating landowners in both project areas; Mike Lewis

and Joe Weigand, Montana Fish, Wildlife & Parks, and field specialists from both USDA Wildlife Services and Montana Fish, Wildlife & Parks.

*Note:* The field portion of this study was funded through a Conservation Innovation Grant provided by the Montana Office of the USDA Natural Resources Conservation Services. It is part of a Master's Degree program for Nathan Lance through Utah State University.

*Contrasting wolf-ungulate interactions in the Greater Yellowstone Ecosystem.*

*Investigators:* Ken Hamlin<sup>1</sup>, Bob Garrott<sup>3</sup>, P.J. White<sup>4</sup>, and J. A. Fuller<sup>1</sup>.

<sup>1</sup>Montana Fish, Wildlife & Parks, 1400 S. 19<sup>th</sup>, Bozeman, MT 59718

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<sup>3</sup>National Park Service, Yellowstone National Park, Mammoth, WY

*Summary:* We documented the effects of wolf restoration on elk populations in the greater Yellowstone area, which varied considerably with variations in ecological and landscape factors. We found no correlation between wolf:elk ratios and the proportion of adult cows pregnant. Pregnancy rates were uniformly high for all herds, approaching the maximal levels that could be expected for this species. Thus, reduced pregnancy was unlikely to have contributed to low indices of recruitment (i.e., ratios of calves per 100 adult females) observed in some herds after wolf establishment. We found a strong negative correlation between the ratio of predators to prey and indices of calf recruitment and attribute this relationship to additive predation effects that reduced calf mortality below levels that would have been experienced in the absence of predators. There was some evidence the survival of adult female elk decreased at high numbers of wolves relative to elk, and that a portion of this increased mortality was likely additive to other causes. Elk populations decreased in areas where combined high numbers of wolves and grizzly bears occurred in relation to numbers of elk. However, elk populations remained stable or increased where consistently low numbers of wolves and/or grizzly bears coexisted with elk and moderate levels of hunter harvest occurred. The effects of wolves on elk populations varied depending on the predominant land use. Wolves reached high numbers relative to elk populations where preservation was the main land use (e.g., Yellowstone National Park) and/or there were few conflicts with agricultural activities (e.g., Gallatin Canyon). However, in areas where agriculture was the predominant land use, consistent depredations by wolves resulted in control actions that maintained low wolf to elk ratios.

*Recent Project Publications:* Hamlin, K. L., R. A. Garrott, P. J. White, and J. A. Fuller. 2008 (*in press*). Contrasting wolf-ungulate interactions in the Greater Yellowstone Ecosystem. Chapter 25 in R. A. Garrott and P. J. White, editors, Large mammal ecology in central Yellowstone: A synthesis of 16 years of integrated field studies. Elsevier – Academic Press.

*Trophic Cascades Involving Humans, Wolves, Elk, and Aspen in the Crown of the Continent Ecosystem.*

*Graduate Student:* Cristina Eisenberg; *Committee Chair:* Dr. William J. Ripple, Oregon State University, Corvallis



*Collaborators:* Shell Canada, Alberta Fish and Wildlife Division, Montana Fish Wildlife and Parks, Waterton Lakes National Park, Glacier National Park, the University of Alberta, the University of Calgary, and Oregon State University.

*Project Summary:* Predation by wolves may be critical for maintaining biodiversity and sustaining aspen communities. Currently in decline in portions of the West, aspen provides key habitat for songbirds and beaver, among other species. One of the major controversies in ecology in the past century concerns whether food has a stronger influence on herbivore population regulation than predation. Predation can drive strong lethal and non-lethal effects throughout food webs, referred to as trophic cascades. I am studying trophic cascades involving human land use, wolves, elk, and aspen in the Crown of the Continent Ecosystem. My objective is to investigate how an apex predator affects aspen communities by influencing abundance and behavior of large herbivore prey. This work will contribute to our knowledge of food webs, via a gradient analysis of the magnitude of trophic cascades and investigation of temporal and spatial trophic interactions in a geographic location where they have not been studied previously. It is part of the *Southern Alberta Montane Elk Study*, an interagency, transboundary collaboration in which we are working with 98 elk fitted with GPS collars, and 7 radio-collared wolf packs.

*Project Activity in 2007:* Coursework, development of research questions, first year of field research.

*Anticipated Completion Date:* 2010

*Policy Issues Related to Wolves in the Northern Rocky Mountains*

*Investigators:* Christian A. Smith and Carolyn A. Sime, Montana Fish, Wildlife and Parks.

*Abstract for publication in conference proceedings:* Wolves were extirpated from the northern Rocky Mountains (NRM) in the 1930s, but returned to the region through natural recolonization of northern Montana in the 1980s and reintroduction to central Idaho and Yellowstone National Park in the 1990s. Wolf numbers increased rapidly after 1996 and now number about 1300. The impacts of wolves on wild ungulate management, hunter harvest, livestock, public safety and agency funding are subjects of significant public speculation and political rhetoric, but scientific data needed for informed decisions are limited. Legal and administrative issues have precluded delisting, even though wolves achieved the biological recovery threshold in 2002. Agency managers and policy makers will face many challenges as they integrate wolves into existing programs and political environments. A commitment to open, inclusive decision-making processes based on sound science and respect for diverse perspectives will provide the best model for addressing issues related to wolves in the NRM.

## **LAW ENFORCEMENT**

The USFWS Office of Law Enforcement remained the lead agency investigating wolf deaths in Montana in 2007. MFWP representatives collaborated and provided assistance on request. Several documented wolf mortalities were suspected to be due to illegal activity and cases are still under investigation. Two citations were issued for violations of the experimental 10j rule and fines were paid.

FWP Game Wardens, by nature of their positions make valuable contributions with respect to outreach about wolves, their management, and the Montana program. In addition, wardens have assisted with various field activities such as retrieving road-killed wolves or responding to wolves caught incidentally by recreational trappers. Wardens have also passed along wolf reports to project personnel and contributed to monitoring efforts. FWP federal wolf funding helps support their activities.

## **FUNDING**

MFWP's core wolf program is funded through 2 separate federal sources. Approximately half is obtained through a direct annual Congressional line-item appropriation and half is obtained directly from USFWS as a part of the agency base budget. These sources are identified in the state-federal wolf cooperative agreement and are transferred on a federal fiscal year cycle which is offset from the state fiscal year cycle by six months. Federal funds can be spent anywhere in Montana for the wolf management and conservation activities specified in the cooperative agreement. Although the agreement states that a total of \$637,000 is to be available to Montana annually, federal budget constraints have sometimes resulted in Congressional recessions (across the board percentage cuts). Therefore, Montana received about \$607,000 in federal fiscal year 2005. In 2006, Montana received about \$641,000. In federal fiscal year 2007, Montana again received about \$641,000 in federal funds. Montana may renegotiate the responsibilities identified in the agreement in the future if adequate federal funds are not available and Montana is unable to fulfill the responsibilities described in the agreement.

Montana allocated its wolf budget in ways typical of any other wildlife conservation and management program. The vast majority of dollars were allocated to population monitoring. Funds were also allocated to support: the MFWP Wildlife Research Lab in Bozeman, MFWP law enforcement assistance, outreach and information / education activities, miscellaneous field equipment, research, increased ungulate monitoring, and additional step-down planning and program development. In-kind contributions and investments were made by the many private citizens who supported or were affected by the success of wolf recovery, by interested non-governmental organizations, and other state and federal agencies.

In federal fiscal years 2005 and 2006, Montana USDA WS was funded through the regular Congressional budgeting process for federal agencies and did not receive USFWS-direct funding. Historically and beginning in the early 1990s, USFWS provided funding to USDA WS western region to assist in wolf recovery and management in the tri-state area. By 2001, about

\$100,000 per year was being transferred from USFWS to USDA WS across the tri state area for field assistance. At that same time, USDA WS also began receiving direct annual appropriations through the USDA Congressional budget process in recognition of the increased workload in the northern Rockies. USFWS continued to fund USDA WS until 2005 through a direct Congressional appropriation and USDA WS western region continued to receive special Congressional directives.

However, in federal fiscal year 2005, Congress deleted the federal appropriation that had been given to USFWS and subsequently transferred to USDA WS for their work in the tri state area. In its place, other special Congressional directives had been incorporated into the USDA WS western region budgets to address funding needs as a result of increased workloads beginning in federal fiscal year 2001. These special directives have been maintained each year since. Both MFWP and MT WS have concerns that Congressional earmarks and/or special directives will be cut or eliminated at the Congressional level. That would have important implications for the two agencies and their ability to fulfill their respective agency responsibilities and the commitments made in the Montana Wolf Plan.

There has been confusion over the coincidental timing of elimination of USFWS funding received by MT WS and MFWP taking on wolf management responsibilities. In federal fiscal year 2005, the USFWS Congressional appropriation that had been provided to the western region of USDA WS was eliminated. In the same federal fiscal year, an interagency cooperative agreement was completed between MFWP and USFWS. As a condition of MFWP signing the agreement, USFWS agency base funding was transferred to MFWP since MFWP was now doing the field program with state personnel. The loss of USFWS funding for tri-state USDA WS gray wolf field activities had nothing to do with a different, independent Congressional earmark appropriation and USFWS base funding for to MFWP to implement work outlined in an MFWP-USFWS interagency cooperative agreement to manage wolves in Montana.

In federal fiscal year 2007, WS spent an estimated \$183,924 responding to wolf complaints and assisting FWP with depredation management responses such as radio collaring or killing problem wolves. This is an increase above the estimated \$152,000 spent in federal fiscal year 2006.

In 2004, Montana coordinated the efforts of Idaho and Wyoming to prepare a tri-state Congressional budget request. MFWP's director presented it to the Congressional Sportsmen's Caucus in fall 2004. The message presented was a celebration of recovery success, accompanied by the honest assessment that securing the investment into the future will require an ongoing national commitment to funding.

How well the nation's wolves and grizzly bears fare in the NRM depends on how well they are accepted by the people who live, work and recreate in these areas. The establishment of adequately funded conservation and management programs will determine the degree to which people will share the land, how well they will tolerate wolves and grizzly bears, and how successfully they will rise to the challenges posed by species recovery. Those challenges are shared by everyone, not just residents of the tri-state area. Therefore, efforts to garner national financial support to fully implement the state's program are ongoing.

## **PERSONNEL AND ACKNOWLEDGEMENTS**

By now, literally hundreds of people have assisted with wolf recovery efforts in a wide variety of ways, and we are indebted to them all. Since 2000, countless more have assisted with the development of the Montana wolf plan and many more continue to assist during the transition from federal management to state management. We especially want to acknowledge the support and understanding of our families and friends.

The MFWP wolf team is comprised of Kent Laudon in Kalispell, Carolyn Sime in Helena, Mike Ross and Val Asher in Bozeman, Liz Bradley in Dillon/Missoula, and Jon Trapp in Red Lodge. Jon Trapp resigned from MFWP in mid-summer 2007 to accept a position with the Red Lodge Fire Department. His position remained vacant for the rest of the calendar year, although Jon did contribute to this year's annual report, and we thank him for his extra time.

But the wolf team is part of a much bigger team of tremendously dedicated agency professionals that make up Montana Fish, Wildlife & Parks. In particular, Dr. Mark Atkinson (MFWP's former wildlife veterinarian) over saw our animal handling protocols welfare guidelines, in addition to being the MFWP lead for wolf disease surveillance and necropsy work. Additional staff at the MFWP Wildlife Research Laboratory also provide significant logistical support and services for the wolf program, including Neil Anderson (Lab Supervisor). Salish Kootenai Confederated Tribes biologist Stacey Courville and Blackfeet Tribe biologist Dan Carney captured and monitored wolves in and around their respective tribal reservations. We thank them for sharing information contained in this report and the close coordination throughout the year.

In 2007, the Montana wolf management program benefited from the contributions from our seasonal technicians Ty Smucker, Kris Boyd, and Kari Holder, all of whom excelled at their jobs and contributed enormously. The Montana wolf management volunteer program was very fortunate to be served by volunteers: Stefanie Bergh, Kari Holder, Emily Schock, Laura Cerruti, Quinn Harrison, Sarah Bassing, Gana Wingard, Samantha Dwinnell, Shannon Kachel, Carly Levell, Natasha Meier, Nick Mitrovich, Trina Wade, and Adia Sovie, and Nathan Stone who worked enthusiastically and with good humor and dedication through long days and weeks. Arlie Burke, Eureka area logger and houndsman, lent his time unselfishly to help with fieldwork, local information, and to pass on old tried and true "woodsmanship" to the next generation of biologists in our volunteer program. We also want to thank the Swan Ecosystem Center and Northwest Connections for their avid interest and help in documenting wolf presence and outreach in the Swan River Valley.

We also thank the private citizens who served on the working group to develop the framework for a Montana Livestock Loss Reduction and Mitigation Program. We also thank the members of the Montana Wolf Management Advisory Council for their ongoing contributions. Their participation on these working groups, respectively, provides valuable guidance from a diversity of perspectives. Their continued collaboration, along with many other Montanans, continues to be the foundation of the program's success to date.

MFWP's wolf program is supported by others throughout the agency. We thank Adam Messer of MFWP Information Services for his patience, good humor, and expertise in creating the maps for this report, his work on all our other wolf project data requests, and for his help with data management. Regional biologists and game wardens, information officers, front desk staff, and program managers contribute their time and expertise in a variety of ways and have been invaluable. We appreciate the MFWP Helena staff from all the Divisions who contributed their expertise and time. We thank Caryn Amacher, Denise Dawson, Rebecca Cooper, Adam Brooks for assisting us with interagency cooperative agreements, grant agreements, and budgeting. We appreciate the wise counsel and participation of the MFWP legal staff, especially Bob Lane. We appreciate the work and dedication of the MFWP Website Team. Jay Lightbody and Don Bartsch at the Print shop prepared and printed outreach materials. Mike Lewis and Joe Weigand contributed their time, funding, and expertise during the electric fladry field trials experiments and data analysis. We thank the staff of the Communications and Education Division for their thoughtful reviews of our work and for their media contributions throughout the year. The Montana Governor's Office, MFWP Director's Office, and the MFWP Commission deserve special recognition for their strong commitment to move forward despite the delisting delay; they provided important leadership and steady guidance throughout the year.

USFWS personnel in Montana included wolf recovery coordinator Ed Bangs (Helena) who shepherded the development of the state-federal cooperative agreement and freely shared information and data about wolves in Montana. We are especially grateful for the financial support and his confidence in the developing state program. Law enforcement agents Rick Branzell (Special Agent, Missoula) and Doug Goessman (Special Agent, Bozeman) investigated wolf mortalities throughout Montana and provided important guidance about the federal regulations. Dominic Dominici (USFWS Agent in Charge, WY) provided valuable guidance and information about a variety of subjects and the interpretation of federal regulations.

USDA WS investigates suspected wolf damage and carries out wolf control activities in Montana. We thank them for contributing their expertise to the state's wolf program and for their willingness to complete investigations in a timely fashion, 7 days a week. WS personnel involved in wolf management in Montana in 2007 included State Director John Steuber, eastern district supervisor Paul J. Hoover, western district supervisor Kraig Glazier, wildlife specialists Dennis Biggs, John Bouchard, Steve Demers, Michael Hoggan, Dan Thomason, Alan Brown, Brian Noftsker, Owen Murnion, Rick Glover, Mike Thomas, Chad Hoover, R.R. Martin, Graeme McDougal, Theodore North, James Rost, Pat Sinclair, John Maetzold, Paul Bucklin, Bart Smith, and James Stevens, and pilots Stan Colton, Tim Graff, Eric Waldorf.

The Montana Wolf Management program field operations also benefited in a multitude of ways from the continued cooperation and collaboration of other state and federal agencies and private interests such as the USDA Forest Service, Montana Department of Natural Resources and Conservation ("State Lands"), U.S. Bureau of Land Management, Plum Creek Timber Company, Glacier National Park, Yellowstone National Park, Idaho Fish and Game, Wyoming Game and Fish, Nez Perce Tribe, Canadian Provincial wildlife professionals, Defenders of Wildlife, Keystone Conservation, Boulder Watershed Group, and the Madison Valley Ranchlands Group.

We deeply appreciate and thank our pilots whose unique and specialized skills, help us find wolves, get counts, and keep us safe in highly challenging, low altitude mountain flying. They include David Hoerner (Hoerner Aviation Inc., Kalispell), Steve Davidson (Selway Aviation, Hamilton), Doug Chapman (Montana Aircraft, Bozeman), Roger Stradley (Gallatin Flying Service, Belgrade), Steve Ard (Tracker Aviation Inc., Belgrade), and Mark Duffy (Bozeman).

The citizens of Montana deserve special recognition for their cautious willingness to craft a balanced plan that recognizes that wolves are a native species now back on the landscape where people live, work and recreate, to accept the responsibility for wolf conservation and management, and their willingness to move forward knowing that it will continue to be controversial, challenging, and that hard decisions have to be made. We also appreciate the time they take to send us wolf report postcards, on-line wolf reports, or to call us on the phone with their information.

And lastly, the countless private landowners in Montana whose property is used by wolves, sometimes at great cost to the owner, deserve our respect, our understanding and attention to their new challenges, and our gratitude.

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## APPENDIX 1

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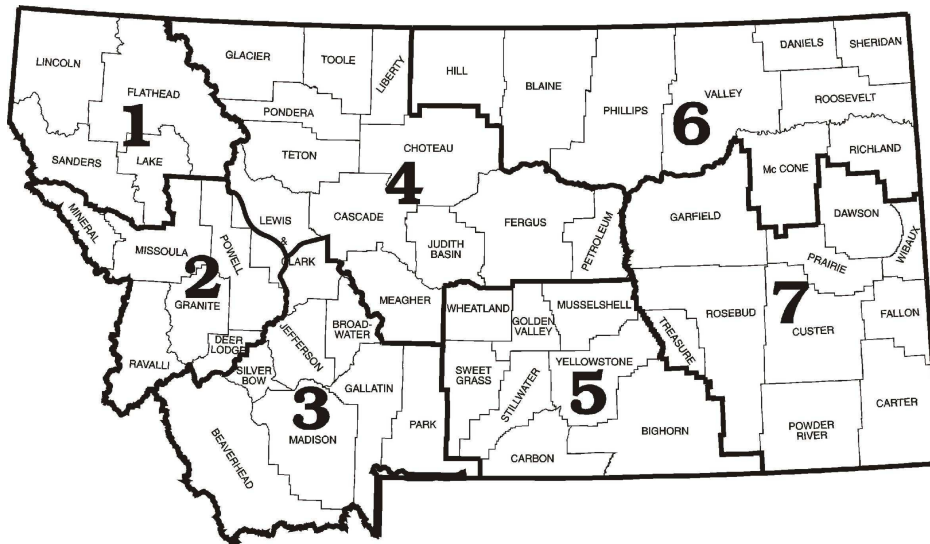
**(to request investigations of injured or dead livestock):**

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Great Falls, MT 59405  
(406) 454-5840

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PO Box 938  
Lewistown, MT 59457  
(406) 538-4658

**REGION 5**  
2300 Lake Elmo Dr  
Billings, MT 59105  
(406) 247-2940

### TO REPORT A DEAD WOLF OR POSSIBLE ILLEGAL ACTIVITY:

#### U.S.Fish and Wildlife Service

- Special Agent, Missoula MT: (406) 329-3000
- Special Agent, Casper, WY: (307) 261-6365

#### Montana Fish, Wildlife & Parks

- Dial 1-800-TIP-MONT

### TO SUBMIT WOLF REPORTS ELECTRONICALLY AND TO LEARN MORE ABOUT THE MONTANA WOLF PROGRAM, SEE:

- [www.fwp.mt.gov/wildthings/wolf](http://www.fwp.mt.gov/wildthings/wolf)

## **APPENDIX 2**

### **Gray Wolf Chronology in Montana**

**1800**

- Wolves are common throughout Montana.

**1884**

- Wolf-bounty law initiates Montanas official eradication effort.

**1915**

- Federal authorities begin wolf control in the West.

**1925**

- Wolf populations eliminated from most of the West.

**1936**

- Gray wolf believed extinct in Montana although wolves and wolf sign still occasionally observed.

**1950**

- Wolves still seen in Wyoming, Montana, and Idaho occasionally but no self-sustaining breeding documented; wolves, likely dispersing from Canada, are killed in Montana and Idaho in every decade through 2000.

**1973**

- Montana protects wolves as state endangered species.

**1974**

- Wolves protected under federal Endangered Species Act of 1973.

**1979**

- A wolf is monitored in British Columbia, just north of Glacier National Park.

**1980**

- A lone wolf kills livestock near Big Sandy, Montana and is killed by the U.S. Fish and Wildlife Service. This is Montana's first documented wolf depredation in more than 50 years.

**1986**

- A wolf den is confirmed in Glacier National Park. The Magic Pack establishes a territory in the North Fork Flathead River valley, in the western portion of Glacier National Park.
- A pack denned on the Blackfeet Reservation, but was not discovered until 1987 when they began to depredate on livestock.

**1987**

- Camas Pack established in the North Fork of the Flathead River valley in Glacier National Park.
- First livestock depredation occurs on the Blackfeet Reservation.

**1990**

- The U.S. Congress establishes a Wolf Management Committee to recommend wolf recovery strategies for Yellowstone National Park and central Idaho.

**1991**

- Congress directs the US Fish and Wildlife Service to prepare a Draft Environmental Impact Statement on wolf recovery in Yellowstone National Park and central Idaho.

**1993**

- An estimated 45 wolves in five packs occupy the federal Northwestern Montana Recovery Area. One pack establishes west of Helena, founded by a female wolf which dispersed from Canada.

**1994**

- Federal EIS on the reintroduction of wolves into Yellowstone National Park and central Idaho completed. Wolves to be reintroduced into Yellowstone National Park and central Idaho for three to five years under the Endangered Species Acts experimental, non-essential rules that grant additional management flexibility. Wolf recovery is defined as 30 breeding pairs--an adult male and an adult female raising two or more pups to Dec. 31--in Montana, Idaho, and Wyoming for three successive years.

**1995**

- Fifteen wolves from four packs captured in Canada are relocated to Yellowstone National Park and 17 individual wolves are released in central Idaho.

**1996**

- Yellowstone National Park receives 17 more wolves from Canada and 10 wolf pups from a depredating pack in northwestern Montana. Twenty wolves are released in central Idaho; 1<sup>st</sup> pups are born in the wild.

**1999**

- Governors of Montana, Idaho, and Wyoming renew a 1997 Memorandum of Understanding to coordinate public involvement to pursue plans to manage a recovered wolf population in the northern Rockies and to assure a timely delisting.

**2000**

- Montana Governor Marc Racicot appoints 12 Montana citizens to the Montana Wolf Management Advisory Council. The council, chaired by rancher Chase Hibbard of Helena, is charged to advise Montana Fish, Wildlife & Parks on wolf management in anticipation of the wolf's delisting.
- US Fish and Wildlife Service determines there are 30 breeding pair in the tri-state Rocky Mountain Recovery Area, marking 2000 as the first year of the three-year countdown to meet wolf population recovery goals.
- An estimated 97 wolves in 8 breeding pairs are counted in Montana.

**2001**

- Montana Wolf Management Advisory Council presents its Report to the Governor to Governor Judy Martz, who directs MFWP to draft wolf conservation and management planning document.
- Montana Legislature removes the gray wolf from Montana's list of predatory species once the wolf is delisted. Upon delisting, wolves will be legally reclassified in Montana as species in need of management. New law includes provisions for the defense of life and private property when a wolf is attacking, killing, or threatening to kill a person, or livestock.
- Montana Fish, Wildlife & Park's draft of the Montana Wolf Conservation and Management Planning Document is reviewed, amended and approved by the Montana Wolf Management Advisory Council.
- An estimated 35 breeding pair, in 51 packs, are counted in the tri-state Rocky Mountain Recovery Area, totaling about 550 wolves. The US Fish and Wildlife Service determines 2001 is second year of the three-year countdown to trigger an official proposal to delist the wolf.
- An estimated 123 wolves in 7 breeding pairs are counted in Montana.

**2002**

- Montana Wolf Conservation and Management Planning Document is released in January. Montana Fish, Wildlife & Parks begins to develop an environmental impact statement (EIS) on the state management of wolves. The public is invited to participate at community work sessions around the state and asked to identify issues and help develop management alternatives.

- Montana Fish, Wildlife & Parks develops draft EIS with five alternatives.
- An estimated 43 breeding pairs are counted in the tri-state Rocky Mountain Wolf Recovery Area, totaling about 663 wolves. The US Fish and Wildlife Service determines 2002 is the third year of the three-year countdown to trigger official proposal to delist the wolves.
- U.S. Fish and Wildlife Service announces that the northern Rockies gray wolf population has achieved biological recovery under the federal Endangered Species Act.
- An estimated 183 wolves in 17 breeding pairs are counted in Montana.

## 2003

- Montana's EIS process includes a 60-day public comment period and statewide community work sessions. The final EIS recommends the adoption of the "updated council" alternative. The Montana Fish, Wildlife & Parks Commission approves the adoption of the preferred alternative – the Council's Update.
- State conservation and management plans completed by MT, ID, and WY and submitted to USFWS.
- States of Montana, Idaho, and Wyoming request funding from Congress.
- U.S. Fish and Wildlife Service expected to begin the official administrative process of delisting gray wolves in the northern Rockies.
- An estimated 761 wolves in 51 breeding pairs are counted in the tri-state Rocky Mountain Wolf Recovery Area at the end of the year.
- An estimated 182 wolves in 10 breeding pairs are counted in Montana.

## 2004

- U.S. Fish and Wildlife Service approves state management plans from Montana and Idaho and rejects Wyoming's plan. Delisting is officially delayed until the impasse is resolved.
- Montana Fish, Wildlife & Parks and the Montana Fish, Wildlife & Parks Commission approve amending the Record of Decision to pave the way for interim state participation in northwest Montana through a limited cooperative agreement.
- In February, Montana Fish, Wildlife & Parks and U.S. Fish and Wildlife Service complete a cooperative agreement covering northwest Montana.
- Montana Fish, Wildlife & Parks receives federal funding and hires staff who begin implementing the state plan prior to delisting and in consultation with U.S. Fish and Wildlife Service.
- Montana Fish, Wildlife & Parks begins close coordination with USDA Wildlife Services to investigate and resolve wolf-livestock conflicts.
- An estimated 835 wolves in 66 breeding pairs are counted in the tri-state Rocky Mountain Wolf Recovery Area at the end of the year.
- An estimated 153 wolves in 15 breeding pairs are counted in Montana.

## 2005

- Wolves in northwest Montana recovery area reclassified as "endangered" by court order.
- U.S. Fish and Wildlife Service adopts more flexible regulations [known as 10(j) regulations] for the experimental population areas of Montana and Idaho.
- Montana Fish, Wildlife & Parks and U.S. Fish and Wildlife Service complete a cooperative agreement paving the way for Montana to assume independent and full responsibility for wolf management and conservation statewide. Montana begins implementing the state plan to the extent allowed by federal regulations throughout the state. Funding from U.S. Fish and Wildlife Service and through special Congressional appropriations fund Montana Fish, Wildlife & Park's wolf team.
- Montanans form a diverse working group of private citizens, non-governmental organizations, and state and federal agencies to begin developing the Montana Livestock Loss Reduction and Mitigation Program. Work is ongoing.
- An estimated 256 wolves in 19 breeding pairs are counted in Montana.

## 2006

- Montana implements as much of approved state plan as possible and within federal guidelines.
- Funding from U.S. Fish and Wildlife Service and special Congressional appropriations continue.

- Montana Fish, Wildlife & Parks and USDA Montana Wildlife Services update an existing interagency cooperative agreement to include gray wolves
- Montana Livestock Loss Reduction and Mitigation Program draft framework completed and draft legislation is prepared for the 2007 Montana Legislature.
- An estimated 316 wolves in 21 breeding pairs are counted in Montana. Distribution continues to be the western one-third of Montana.

## 2007

- Montana implements as much of approved state plan as possible and within federal guidelines.
- Funding from U.S. Fish and Wildlife Service and special Congressional appropriations continue.
- HB 364 passed the 2007 Montana Legislature, creating the Montana Livestock Loss Reduction and Mitigation Program; Oversight Board is appointed by the Governor and administrative officer of the Board is hired. First Board meeting, fundraising, and rule-making to begin early in 2008.
- MFWP proposes a tentative wolf hunting/trapping season structure proposal which is approved by the MFWP Commission, enabling the agency to gather public comment. (decision timeline is occurs in 2008).
- U.S. Fish and Wildlife Service proposes modification of the Experimental Rules (10j) to provide additional flexibility to northern Rockies states with approved plans that applies to the experimental areas of those states, respectively.
- U.S. Fish and Wildlife Service approves Wyoming's wolf management plan and state laws.
- U.S. Fish and Wildlife Service proposes a Northern Rockies Distinct Population Segment and to delist wolves in the northern Rockies in states with approved plans.
- An estimated minimum of 422 wolves in 39 breeding pairs are counted in Montana. Distribution continues to be the western one-third of Montana



**WOLF CONSERVATION AND MANAGEMENT  
IN IDAHO  
PROGRESS REPORT 2007**



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## EXECUTIVE SUMMARY

In January 2005, the U.S. Fish and Wildlife Service (USFWS) published and adopted new regulations (10(j) Rule) governing wolf management within the Nonessential Experimental Population Areas of Idaho south of Interstate Highway 90 (Endangered and Threatened Wildlife and Plants; Regulation for Nonessential Experimental Populations of the Western Distinct Population Segment of the Gray Wolf [50 CFR Part 17.84]). The new 10(j) Rule allowed states, with USFWS-approved wolf management plans, to petition the Secretary of Interior for certain wolf management authorities as an interim measure to delisting. In January 2006, the Secretary of Interior and the Governor of Idaho signed a Memorandum of Agreement (MOA), which transferred most wolf management responsibilities to the State of Idaho. The Idaho Department of Fish and Game (IDFG) is the primary state agency responsible for carrying out wolf management activities in Idaho. In April 2005, the Governor of Idaho and the Nez Perce Tribe (NPT) signed an MOA that outlined responsibilities between the State of Idaho and the NPT in regards to wolf conservation and management. The USFWS published a draft delisting rule in February 2007 and a final is scheduled for February 2008. This annual progress report is a cooperative effort between the IDFG and the NPT with contributions from U. S. Department of Agriculture Wildlife Services (WS) summarizing wolf activity and related management in Idaho during 2007.

During 2007, biologists documented 83 resident wolf packs in Idaho and all of those remained by the end of the year. A minimum of 489 wolves was observed, and the minimum population was estimated at 732 wolves (Appendix A). In addition, there were 13 documented border packs counted for Montana and Wyoming that established territories straddling the Idaho state boundary and likely spent some time in Idaho. Of the 59 packs known to have reproduced, 43 packs qualified as breeding pairs by the end of the year. These 59 reproductive packs produced a minimum 200 pups.

In Idaho, wolf packs ranged from the Canadian border south to Interstate Highway 84, and from the Oregon border east to the Montana and Wyoming borders. Dispersing wolves were occasionally reported in previously unoccupied areas. Seventeen previously unknown packs were documented for the first time during 2007. Three hundred eighty-two wolf observations were reported on IDFG's online website report form during 2007.

Seventy-eight wolves were confirmed to have died in Idaho in 2007. Of known mortalities, agency control and legal landowner take in response to wolf-livestock depredation accounted for 50 deaths, other human causes (including illegal take) 18 deaths, 8 unknown causes, and 2 wolves died of natural causes.

During the 2007 calendar year, 73 cattle, 185 sheep, and 14 dogs were classified by WS as confirmed or probable kills by wolves.

## ACKNOWLEDGEMENTS

Wolf management in Idaho is a cooperative effort between the State of Idaho, NPT, WS, and the USFWS. The Governor's Office of Species Conservation directors Jim Caswell and Nate Fisher, and especially program advisor Jeff Allen provided insight, assistance, and oversight. The NPT's Executive Committee and Wildlife Program Director Keith Lawrence provided support and input. Mark Collinge, George Graves, Todd Grimm, Rick Williamson, and other WS field personnel helped resolve wolf depredations on livestock. Ed Bangs, Jeff Foss, Steve Duke, Robert Romero, Scott Bragonier, Scott Kabasa, and Scott Winkler with the USFWS provided support and assistance in wolf management responsibilities. Jim Unsworth and Brad Compton provided support and input and numerous strategy sessions along with making some wolf control calls. We would also like to thank all the Outfitters and Guides for their information and assistance in the backcountry.

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Cover photo shot by Laura Robinson during winter capture of alpha female B109 of the Warm Springs pack.

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## INTRODUCTION

In 1973, the gray wolf (*Canis lupus*) was listed under the Endangered Species Act (ESA) and protected as an endangered species in the continental U. S. The USFWS is mandated to recover federally listed species, including gray wolves. In the early 1980s, individual wolves, naturally dispersing from Canada, recolonized portions of northwest Montana near Glacier National Park. The first USFWS wolf recovery plan was developed through interagency cooperation in 1987 (USFWS 1987). The 1987 plan called for establishing 3 northern Rocky Mountain wolf recovery areas: northwest Montana (NWMT), the greater Yellowstone Area (GYA) predominantly in Wyoming, and central Idaho (CID). The plan called for natural recovery in northwestern Montana and reintroductions of wolves into Yellowstone National Park and central Idaho. Following the guidelines of the 1987 plan, the USFWS developed an Environmental Impact Statement (EIS) for the reintroduction of gray wolves into Yellowstone National Park and central Idaho (USFWS 1994). The EIS designated the GYA and CID recovery areas as Nonessential Experimental Population Areas and called for reintroductions of wolves as nonessential experimental populations, a lesser protective classification under section 10(j) of the ESA, to facilitate wolf management and conflict resolution. The Secretary of Interior approved the final EIS in 1994. In 1995 and 1996, 66 wolves were captured in Alberta and British Columbia, Canada, respectively; 31 of which were reintroduced into Yellowstone National Park and 35 into central Idaho.

Also in 1994, the USFWS developed a Final Rule, which provided management guidelines for recovering nonessential experimental wolf populations in the GYA and CID recovery areas. These guidelines differed somewhat from federal guidelines for fully endangered wolves in the NWMT recovery area. The state of Idaho contains portions of all 3 northern Rocky Mountain recovery areas (Figure 1). Wolves south of Interstate Highway 90 (I-90) are classified as nonessential experimental and are managed according to the provisions of the Final Rule. Wolves north of I-90 are classified and managed under a fully endangered ESA classification.

Efforts between the State of Idaho and the USFWS to develop a state wolf recovery plan were terminated in 1995 when the state legislature rejected a draft plan and prevented the IDFG from engaging in wolf recovery activities. In 1995, the NPT completed, and the USFWS approved, the “Wolf Recovery and Management Plan for Idaho”, providing the mechanism for the USFWS to enter into a Cooperative Agreement with the NPT to recover and manage wolves in the CID recovery area. Wildlife Services (WS) also became partners with the USFWS to assist in investigating depredations and implementing wolf control actions in response to wolf-livestock conflicts.

In March 2002, the Idaho Legislature accepted and passed the Idaho Wolf Conservation and Management Plan ([http://fishandgame.idaho.gov/cms/wildlife/wolves/wolf\\_plan.pdf](http://fishandgame.idaho.gov/cms/wildlife/wolves/wolf_plan.pdf)). In April 2003, the Legislature passed House Bill 294, allowing the state to participate in wolf management, and IDFG to assist the Governor’s Office of Species Conservation in implementing the State of Idaho’s Wolf Conservation and Management Plan as well as participate in wolf management with the USFWS and the NPT.

In 2003 and 2004, IDFG participated in wolf management in cooperation with other governments and agencies. The IDFG also started to develop a statewide program in preparation for overseeing wolf management in Idaho. Wolves were monitored and managed under cooperative agreements and work plans between cooperating governments and agencies.

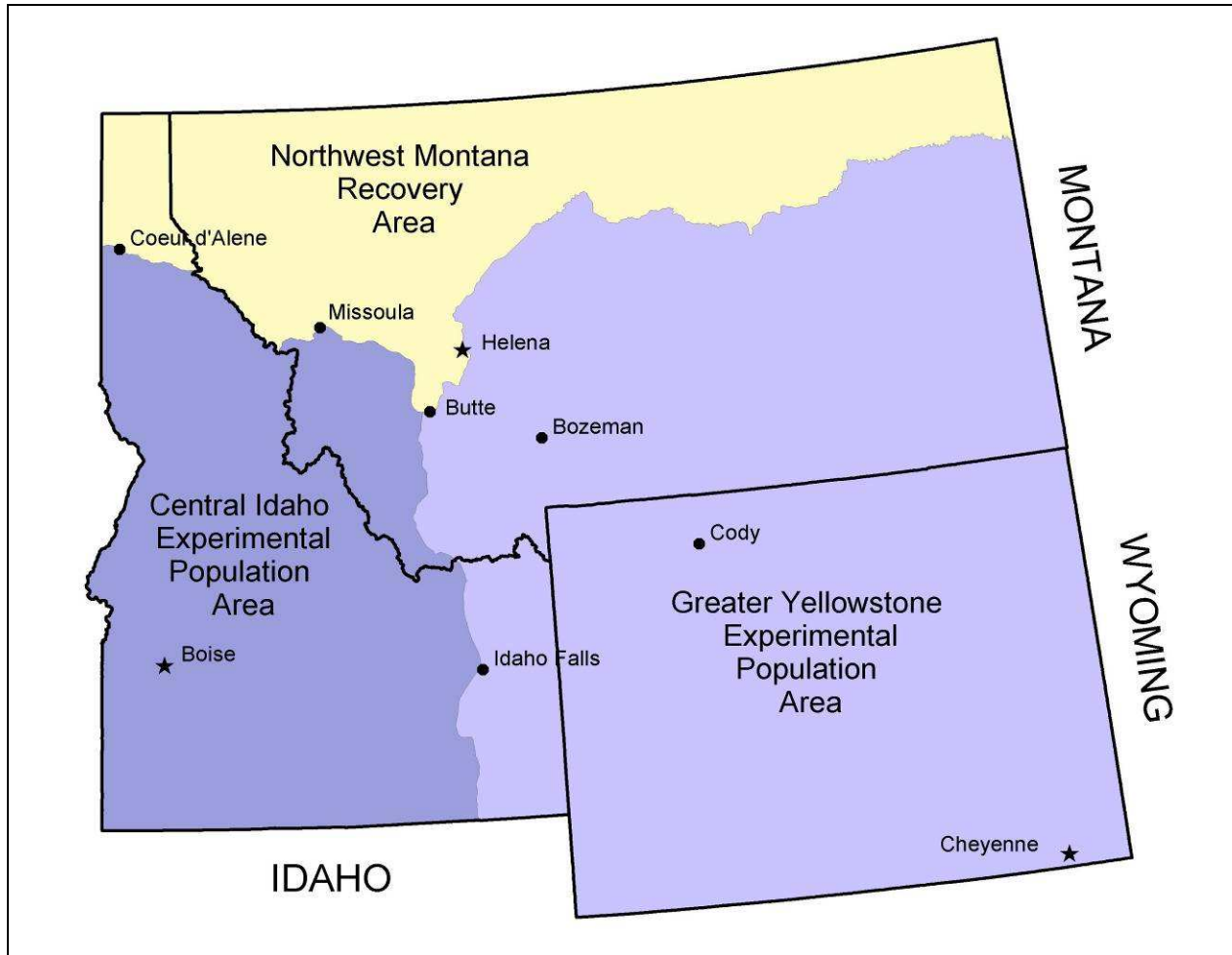


Figure 1. Recovery areas established by the U.S. Fish and Wildlife Service to restore gray wolf populations in the northern Rocky Mountains of Idaho, Montana, and Wyoming. Wolves are naturally recovering in the Northwest Montana Recovery Area, while wolves were reintroduced into the Central Idaho and Greater Yellowstone Experimental Population Areas.

The established northern Rocky Mountain population recovery goal of 30 breeding pairs of wolves well distributed throughout the 3 states of Idaho, Montana, and Wyoming for 3 consecutive years was achieved in December 2002 (USFWS et al. 2003). In 2003, the USFWS adopted regulations that reclassified, or down-listed, wolves from endangered to threatened in Idaho north of I-90; however, in early 2005, a federal court judge remanded these regulations. Consequently, wolves north of I-90 remained classified as fully endangered.

The ultimate goal of federal, state, and tribal governments is to recover and remove wolves from the protections of the ESA (delisting process). The USFWS initiated the delisting process when the northern Rocky Mountain wolf population met or exceeded established population goals, and the 3 states of Idaho, Montana, and Wyoming each had USFWS-approved wolf management

plans and other legislation and regulations in place to ensure long-term conservation of wolves. By 2003, most federal delisting requirements had been met. Wolf population recovery goals were met in 2002 and the states of Idaho and Montana had USFWS-approved wolf management plans and adequate state laws in place. Wyoming's wolf management plan, however, was not approved by the USFWS. In response, Wyoming sued the federal government requesting court approval of their plan. Consequently, delisting was delayed until Wyoming made USFWS-requested adjustments to its plan, which occurred in late 2007.

In response to this delay, in February 2005, the USFWS revised the Final Rule (10(j) Rule). The new 10(j) Rule (Endangered and Threatened Wildlife and Plants; Regulation for Nonessential Experimental Populations of the Western Distinct Population Segment of the Gray Wolf [50 CFR Part 17.84]) applies only within the Nonessential Experimental Population Areas for states with USFWS-approved wolf management plans; currently Idaho and Montana (Figure 2). The 10(j) Rule is an interim measure to provide Idaho and Montana with more local wolf management authorities until wolves can be delisted.

The 10(j) Rule allowed the states of Idaho and Montana to petition the Department of Interior to assume many day-to-day wolf management authorities. In January 2006, a MOA between the Secretary of Interior and the Governor of Idaho was signed that transferred most management authorities previously held by the USFWS to Idaho. The State of Idaho currently oversees daily management of wolves in Idaho and coordinates between agencies to fulfill obligations under the 10(j) Rule, the ESA, and the state wolf management plan. The USFWS developed a new 10j rule and filed it in the Federal Register in January 2008. It will take effect in February 2008. The primary changes in the rule allow: 1) the public to kill a wolf attacking their dog or livestock on public land, and 2) more flexibility for states or tribes to kill wolves that are impacting big game populations.

In May 2005, an MOA was signed between the NPT and State of Idaho that outlined wolf monitoring and management responsibilities shared between the 2 governments. Under the MOA, the NPT is responsible for monitoring wolves within IDFG Clearwater Region and McCall Subregion, while the State of Idaho is responsible for monitoring wolves across the rest of the state and management statewide.

In February 2007, the USFWS proposed a delisting rule that would provide 2 alternate tracks to delisting. If Wyoming's plan was made acceptable and court cases resolved, the 3 states would be delisted simultaneously. Alternatively, if Wyoming did not provide adequate regulatory mechanisms including an acceptable plan, the USFWS would delist wolves in Montana, Idaho and most of Wyoming, but leave them listed in northwest Wyoming surrounding Yellowstone and Grand Teton National Parks. Wyoming and USFWS agreed upon a final plan in late 2007 and delisting is proceeding with a posting date of February 28, 2008 anticipated. Litigation is also anticipated that may delay implementation of state plans.

In preparation for delisting, IDFG prepared a Wolf Population Management Plan which aims to stabilize the wolf population between 2005 and 2007 levels and is designed to manage conflicts between wolves and human interests. It also provides for wolf harvest opportunities and non-

consumptive enjoyment of wolves. The final version of this plan is expected to be approved by the IDFG commission in March 2008.

This report fulfills annual USFWS requirements to summarize and report wolf status and management activities in Idaho. The goal of the State of Idaho, NPT, USFWS, and WS is to continue to maximize knowledge of wolves in Idaho while reducing conflicts and continuing toward eventual delisting of wolves in the northern Rocky Mountains.

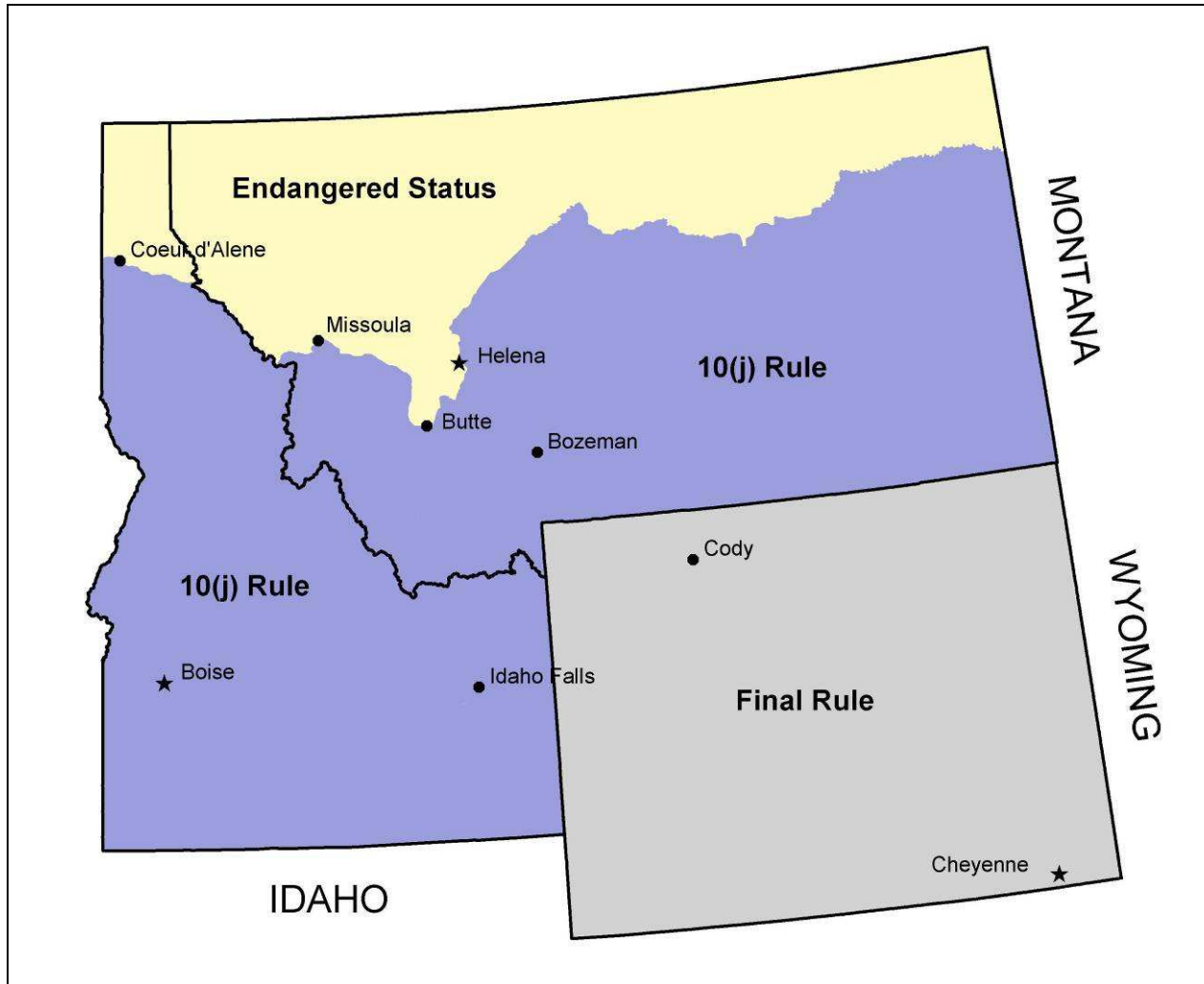


Figure 2. Management areas established by the U.S. Fish and Wildlife Service under the 10(j) Rule to restore gray wolf populations in the northern Rocky Mountains of Idaho, Montana, and Wyoming.

## STATEWIDE SUMMARY

Previous progress reports by the NPT and the USFWS summarized wolf status within the CID recovery area including central Idaho and portions of southwestern Montana. However, this report summarizes the status of wolves and wolf management within the borders of the State of Idaho, including portions of all 3 northern Rocky Mountain recovery areas; endangered wolves in the NWMT recovery area north of I-90, and nonessential experimental wolves within Idaho portions of the CID and GYA recovery areas south of I-90.

Central Idaho, a vast, mountainous, and remote area, is one of the largest remaining undeveloped blocks of public land in the conterminous U. S. Central Idaho includes 3 contiguous Wilderness Areas, the Selway-Bitterroot, Frank Church River-of-No-Return, and Gospel Hump, encompassing almost 4 million acres (1.6 million ha), which represents the largest block of federally-designated Wilderness in the lower 48 states. Three major mountain chains and 2 large river systems create a very diverse landscape, ranging from sagebrush-covered flatlands in the southern part of Idaho, to extremely rugged peaks in the central and northern parts. A moisture gradient also influences the habitats of both wolves and their prey, with wetter maritime climates in the north supporting western red cedar (*Thuja plicata*)-western hemlock (*Tsuga heterophylla*) vegetation types, grading into continental climates of Douglas-fir (*Pseudotsuga menziesii*) and Ponderosa pine (*Pinus ponderosa*) to the south. Elevations vary from 1,500 feet (457 m) to just over 12,000 feet (3,657 m). Annual precipitation varies from less than 8 inches (20 cm) at lower elevations to almost 100 inches (254 cm) at upper elevations.

### **Wolf Population Status**

The Idaho wolf population has continued to expand in both numbers and packs since initial reintroductions in 1995 (Figures 3 and 4). By the end of 2007, 83 documented wolf packs remained extant in Idaho, including 17 newly documented packs, and a minimum of 489 wolves was observed or monitored by wolf program personnel. The minimum population estimate was 732 (Appendix A).

### **Distribution, Reproduction, and Population Growth**

Wolves were well distributed in the state from the Canadian border, south to the Snake River Plain, and east to the Montana and Wyoming borders (Figure 5). Of the 83 documented packs during 2007, territories of all were predominantly on U.S. Forest Service (USFS) public lands.

Of 83 documented packs, a minimum of 59 produced litters and 43 qualified as breeding pairs (Table 1). A minimum of 200 wolf pups was documented in 2007. Wolf pup counts were conservative estimates because not all pups were observed from packs that were monitored, and some documented packs were not visited. Minimum documented litter sizes ranged from 1-8 pups. Average minimum litter size for those packs where counts were believed complete ( $n = 35$ ) was 4.1 pups per litter. Ten new breeding pairs were documented and the reproductive status of 24 documented packs was either not verified or believed to be non-reproductive during 2007. Many areas typically visited to count pups were not available to field crews due to extensive forest fires and subsequent area closures this year.

The estimated wolf population increased 9% between 2006 ( $n = 673$ ) and 2007 ( $n = 732$ ) (Fig. 3). The social carrying capacity for wolves will likely be below the biological carrying capacity as wolves are managed in concert with other wildlife values, livestock concerns, and management objectives. Ultimately the citizens of Idaho, not habitat, will determine the number of wolves that will persist in the state.

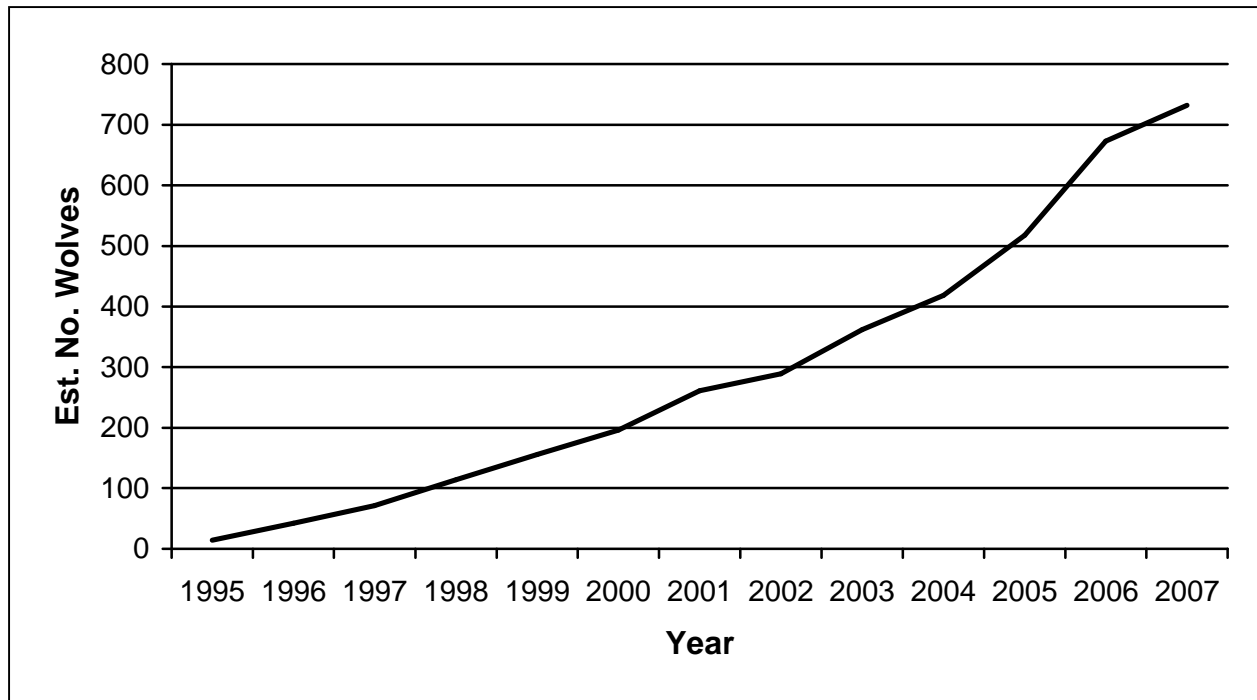


Figure 3. Estimated number of wolves in Idaho, 1995-2007.

Annual numbers were based on best information available and were retroactively updated as new information became available.



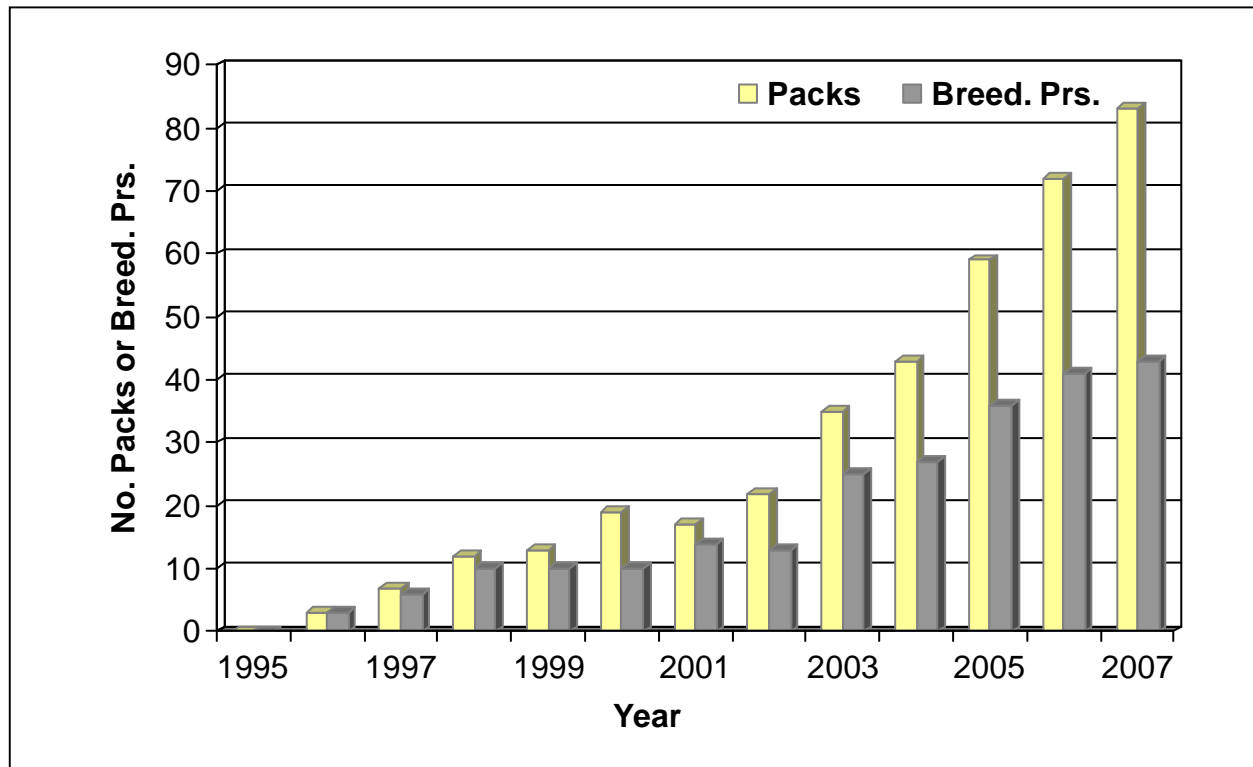


Figure 4. Number of documented wolf packs and breeding pairs in Idaho, 1995-2007. Annual numbers were based on best information available and were retroactively updated as new information became available.

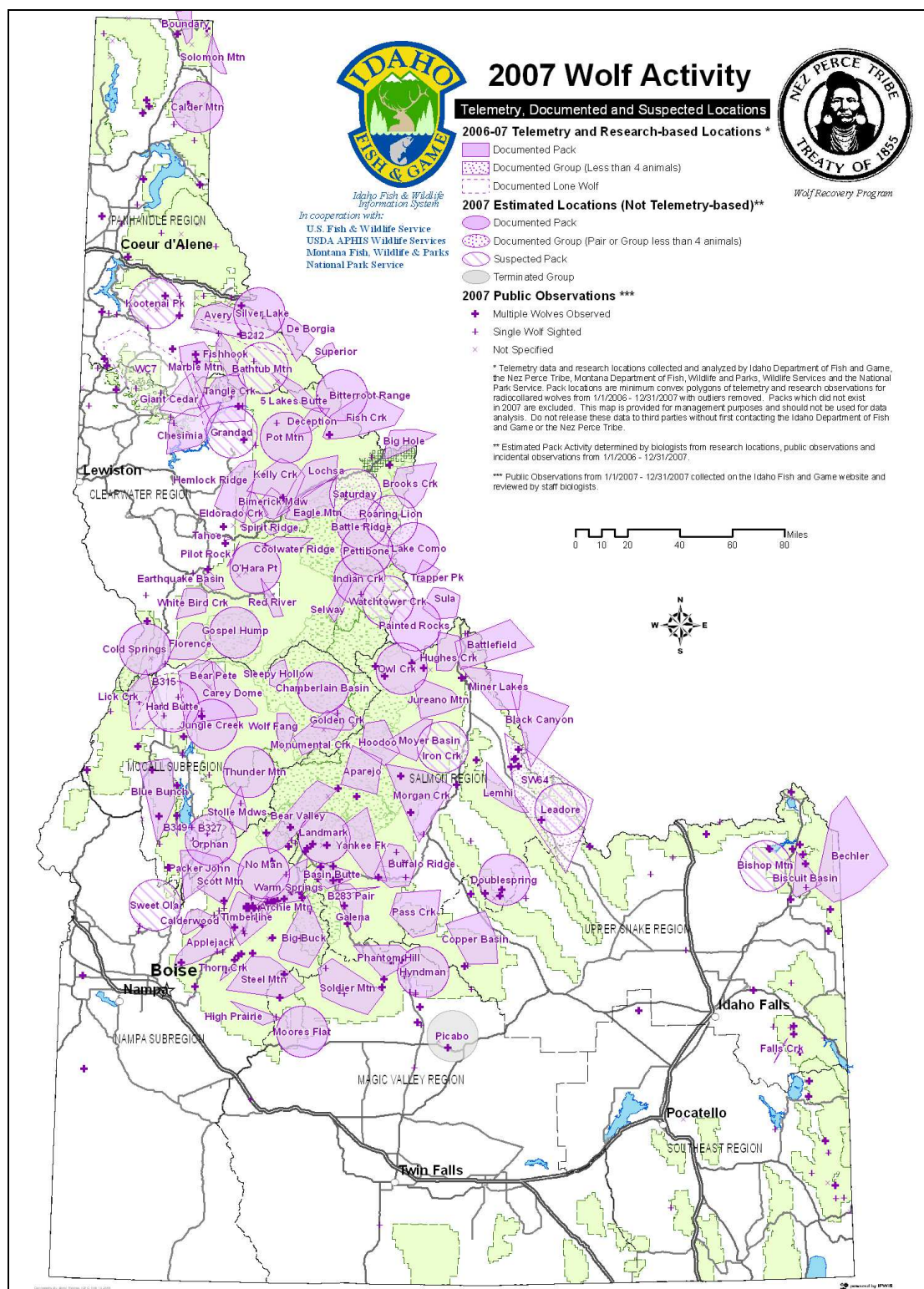


Figure 5. Distribution of documented and suspected wolf packs, other documented groups, and public wolf reports in Idaho, 2007.

*Table 1. Number of wolves observed, documented packs, and other documented wolf groups; reproductive status; mortality; dispersal; monitoring status; and wolf-caused livestock depredations within Idaho Department of Fish and Game management regions, 2007.*

	Management Region								Total
	Panhandle	Clearwater	McCall	Nampa	Magic Valley	Southeast	Upper Snake	Salmon	
Minimum number wolves detected <sup>a</sup>	37	148	84	85	9	0	10	116	489
Documented packs									
No. packs beginning of year <sup>b</sup>	8	26	14	13	4	0	3	15	83
No. packs removed <sup>b</sup>	0	0	0	0	0	0	0	0	0
No. packs end of year	8	26	14	13	4	0	3	15	83
Other documented groups <sup>c</sup>									
No. other groups beginning of year <sup>c</sup>	3	5	4	1	1	0	1	6	21
No. other groups removed <sup>c</sup>	0	0	0	0	1	0	0	1	2
No. other groups end of year	3	5	4	1	0	0	1	5	19
Reproductive status									
Minimum no. pups produced	5(1)	72	40	32	9(5)	0	3	39(1)	200(7)
No. reproductive packs	4	19	8	13	2	0	2	11	59
No. breeding pairs <sup>d</sup>	1	17	7	8	1	0	1	8	43
Documented mortalities									
Natural	0	2	0	0	0	0	0	0	2
Control <sup>e</sup>	0	3	10	5	12	0	8	12	50
Other human-caused <sup>f</sup>	3	5	2	1	0	0	1	6	18
Unknown	2	4	1	0	0	0	1	0	8
Known dispersal	2	0	0	2	0	0	0	1	5
Monitoring status									
Active radiocollars	7	30	14	13	3	0	3	16	86
No. wolf captures <sup>g</sup>	2	16	6	10	3	0	2	11	50
No. wolves missing <sup>h</sup>	1	2	0	2	1	0	0	5	11
Confirmed (probable) wolf-caused livestock losses									
Cattle	0	1(2)	8(2)	3	9(4)	0	14(5)	18(7)	53(20)
Sheep	0	0	60(3)	56(5)	41(7)	0	2	11	170(15)
Dogs	0	0	4(3)	(2)	3	0	1(1)	0	8(6)

<sup>a</sup> Number of wolves observed by wolf program personnel in 2007. Sum of this column does not equate to number of wolves estimated to be present in the population.

<sup>b</sup> Does not include documented packs removed due to lack of verified evidence for the preceding 2 years. Includes documented border packs tallied for Idaho.

<sup>c</sup> Other documented wolf groups include suspected packs and known and suspected mated pairs; verified groups of wolves that do not meet the definition of a documented pack.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

<sup>e</sup> Includes agency lethal control and legal take by landowners.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>h</sup> Radiocollared wolves that became missing in 2007.

## **Mortality**

Seventy-eight documented wolf mortalities were recorded in 2007 (Table 1). Sixty-eight of the confirmed mortalities were human caused, eight were unknown, and two were natural. Of 68 confirmed human-caused mortalities, 43 wolves were controlled for livestock depredations by WS, nine were illegally taken, nine were from other human causes, and seven were legally taken (shot by landowners while harassing or attacking livestock). These figures are underestimates of the true amount of overall mortality occurring within the wolf population, as documenting mortalities of uncollared wolves that are not controlled by agencies is difficult. Only 2 wolf deaths due to natural causes were recorded, another indication that mortality was underestimated, as more individuals likely succumbed to non human-related factors. There were no means to estimate deaths of pups that occurred prior to our visits.

More wolves ( $n = 43$ ) were lethally controlled by WS in Idaho in 2007 than in any previous year. This mortality stemmed from removals in 15 packs: the Buffalo Ridge pack (2 wolves) near Clayton, Idaho; the Carey Dome pack (2 wolves) north of McCall; the Copper Basin pack (6 wolves) northwest of Mackay, Idaho; the Falls Creek pack (1 wolf); the Galena pack (1 wolf) near Stanley, Idaho; the Hard Butte pack (1 wolf) northeast of New Meadows, Idaho; the High Prairie pack (2 wolves) near Prairie, Idaho; the Jungle Creek pack (4 wolves) north of McCall, Idaho; the Jureano Mountain pack (3 wolves) west of Salmon, Idaho; the Lemhi pack (1 wolf) northwest of Leadore, Idaho; the Moores Flat pack (9 wolves) south of Pine, Idaho; the Morgan Creek pack (2 wolves) northwest of Challis, Idaho; the Packer John pack (1 wolf) east of Smith's Ferry, Idaho; the Pilot Rock pack (1 wolf) east of Clearwater, Idaho; and the Steel Mountain pack (2 wolves) near Trinity Lakes, Idaho. An additional 5 wolves were lethally removed from paired or unknown groups of wolves. Finally, 7 wolves were taken in the act of attacking livestock on private property by landowners under the 10(j) Rule.

## **Livestock and Dog Mortalities**

During 2007, WS conducted 127 depredation investigations involving reported wolf-killed livestock and dogs. Of those, 86 (68%) involved confirmed wolf depredations, 21 (17%) involved probable wolf depredations, 17 (13%) were possible/unknown wolf depredations, and 3 (2%) were due to causes other than wolves. During the calendar year, WS reported 73 cattle, 185 sheep, and 14 dogs that were classified as confirmed or probable wolf kills (Table 1). Non-lethal techniques were used where appropriate to reduce wolf-livestock conflicts.

## **Law Enforcement**

During 2007, USFWS Special Agents and IDFG Conservation Officers cooperatively investigated and reported 38 incidents of known or suspected wolf mortalities. Of the 38 incidents investigated, 9 were illegally killed, 8 were legally killed, 1 died of natural causes, 5 from other human causes, and the cause of death for 9 was unknown. For the remaining 6 incidents, either a carcass could not be found or the report or incident was not wolf-related. The number of investigations detailed here represents a minimum, as some cases were still pending or undisclosed for investigative purposes and not reported in this text.

## **Research**

Agencies continued to coordinate and support scientific research assisting in long-term wolf conservation and management.

### **Statewide Elk and Mule Deer Ecology Study**

During 2007, the IDFG continued its effort to measure the effects of wolf predation, habitat condition, and forage nutrition on elk and mule deer populations across Idaho. Goals were met to radiocollar adult female elk and mule deer, 6-month-old elk calves and deer fawns, and newborn elk calves and deer fawns. Action is on-going to meet research objectives which include 1) determine survival, cause-specific mortality, pregnancy rates, and body condition for radiocollared animals; 2) monitor wolf distribution and abundance within project areas; 3) develop habitat condition and trend maps for Idaho; and 4) manipulate predator populations in project areas and monitor ungulate population responses. This research is providing contemporary estimates of non-hunting mortality, survival, and productivity of elk and deer populations for determining appropriate harvest levels. Further, this research will help identify and evaluate specific predator and habitat management actions necessary to achieve ungulate population objectives.

### **Developing Monitoring Protocols for the Long-term Conservation and Management of Gray Wolves in Idaho**

Gray wolf recovery efforts in the northern Rocky Mountains (Idaho, Montana, and Wyoming) have met with much success, as all 3 states support wolf populations. Monitoring and estimating recovering wolf populations in the northern Rocky Mountains has, to date, relied on time-intensive and expensive radiotelemetry techniques. Although this approach worked well in Idaho with initial small population sizes, these techniques are no longer appropriate or cost-effective given the current, much larger recovered population size and nearly statewide distribution.

The NPT, University of Montana Cooperative Wildlife Research Unit, USFWS, IDFG, and the University of Idaho are collaborating on a multi-year research effort to develop less intensive and more cost-effective approaches for estimating wolf population numbers across the varied landscapes of Idaho. Primary funding for this effort was provided by USFWS through their Tribal Wildlife Grants Program. A 3.5-year research effort will develop standardized wolf monitoring protocols for estimating wolf population parameters appropriate for meeting post-delisting monitoring and management needs, help implement wolf management plans, address wolf management goals and objectives, and ensure long-term conservation and management of the species.

Research began in earnest in 2007 by mailing a hunter survey to 2,000 hunters across 4 study areas in Idaho. In the summer of 2007, field technicians conducted scat surveys at 480 sites in the 4 study areas and collected over 250 genetic samples without the aid of radiotelemetry. Genetic samples are currently being analyzed by the University of Idaho. In addition, project researchers have invented an automated remote sensing tool that broadcasts a howl, records

responses, and then shuts down until the next scheduled broadcast. This remote sensing tool can be particularly useful for detecting wolves in roadless areas and will be tested on wolf packs in summer 2008. Data obtained from each of these methods are designed to be incorporated into a statistical model (occupancy model) that will provide the framework for statewide population monitoring. Initial results from an occupancy model demonstrated promise for using this model to estimate wolf pack abundance. In part, due to these encouraging results, Montana Fish, Wildlife and Parks (MTFWP) is funding a graduate study to apply a similar occupancy model approach to use for wolf population monitoring in Montana.

Standardized monitoring protocols will be important in satisfying the USFWS' 5-year post-delisting monitoring requirements and will be crucial to ensure sustainability of the population through effective post-delisting conservation and management of wolves. Our results should be useful to other states developing monitoring protocols for wolves.

### **Outreach**

Program personnel presented 46 information and education programs to a minimum of 1,876 people. Audiences included school students, agency personnel, livestock associations, community groups, sportsmen and outfitters, and legislators. In addition to organized presentations, program personnel talked to numerous members of the public via telephone, email, and in person. Also, news articles were often released by IDFG summarizing wolf-related livestock mortalities, as well as wolf mortalities and other noteworthy items about wolves on a weekly basis. Program personnel talked with reporters from across Idaho and the nation regularly. Wolves continued to be an interesting topic for the public and television, radio, and print media contacted the program leaders often to obtain wolf information and agency perspective. Thus, thousands more people were contacted regularly by program personnel about wolves through radio, television, and print media.

The IDFG online wolf reporting system provided an opportunity for the public and professionals to record wolf observations in Idaho. During 2007, 382 wolf observations were reported on the web site. The online reporting system is a tool which assists biologists in identifying areas of possible wolf activity and allows the public a means to communicate wolf concerns to the appropriate agency.

The Wolf Population Management Plan was submitted for public comment in December. At least 1 open house was held in each IDFG administrative region during November and December 2007, ten in all; 452 citizens listened to presentations and provided input on the plan. The public comment period that ended 31 December 2007 drew 1,287 comments from groups and individuals which were analyzed for content and opinion.

## **REGIONAL SUMMARIES**

### **Panhandle Region**

Wolves found north of I-90 in this region are part of the NWMT Recovery Area and are classified as endangered. Wolves south of I-90 along the southern boundary of this region are within the CID recovery area and are classified as nonessential experimental animals.

There were 5 documented resident, 2 suspected resident, and 6 documented border packs (three tallied for Idaho and three tallied for Montana) in the Panhandle Region in 2007 (Figure 6; Table 2). Four of the 8 documented Idaho packs (Avery, Calder Mountain, Fishhook, and Marble Mountain) produced litters, but only the Fishhook pack qualified as breeding pair. Litter production and breeding pair estimates were minimums as manpower and field season timing were insufficient to adequately survey all known Panhandle Region packs. The Calder Mountain and Solomon Mountain border packs shared time between Idaho and Montana, and were counted as Idaho packs, while the De Borgia, Silver Lake, and Superior packs were counted by Montana. The Boundary pack moved between Idaho and Canada.

Numerous observations of wolves or wolf sign have been reported in areas of the Panhandle Region where known wolf packs have not been documented. Reports indicated the recurring presence of wolves in the Coeur d'Alene Mountains, the eastern (near Priest Lake) and western (Pack River & southern Purcell Mountain ranges) portions of Big Game Management Unit 1. Observation reports have been received from additional areas of the Panhandle Region though not in a recurring fashion that would lead investigators to believe the persistent presence of wolves. Future monitoring will be conducted to determine the status of wolf activity in these areas of the Panhandle Region.

No documented or probable wolf-caused livestock losses occurred, although 1 domestic calf was confirmed to have been injured.

## **Law Enforcement Summary**

Conservation Officers investigated or responded to 7 reports involving wolves. The carcasses of 2 dead wolves were recovered for which the causes of death were not determined. A road-killed wolf was recovered from I-90 approximately 3 miles (5 km) east of the city of Wallace, Idaho, and another reported road-killed wolf turned out to be a domestic dog. Regional IDFG staff recovered the radio-collars of 2 wolves that appeared to have been illegally killed. An IDFG Officer investigated the death of a domestic dog that was traveling with its owner in a remote area known to have significant wolf activity. The dog's death was later determined to have been caused by strychnine poisoning.

## **Documented Resident Packs**

### **Avery**

Four adults and 1 pup were observed by IDFG personnel in September 2007. In April 2007, an IDFG Conservation Officer recovered the carcass of a dead wolf in Hammond Creek that was likely a member of the Avery pack. The cause of death was unknown. Trapping efforts in September 2007 resulted in the radiocollaring of 1 gray pup, B357, which was discovered on mortality mode in late October and determined to have been illegally killed. Adult male B234 was the only marked wolf in this pack. The Avery pack was likely responsible for the deaths of 2 mountain lion pursuit hounds along the eastern edge of their home range and 2 pet Pyrenees pups on the southern edge of their range during 2007; none of these were verified or reported by



WS personnel and therefore are not reported here. While reproduction was verified, this pack did not qualify as a breeding pair.

### **Fishhook**

Program personnel determined the presence of 4 adults and 2 pups during September 2007 while investigating rendezvous sites. An aerial survey in November observed 8 wolves (official pack count). Two radiocollared wolves, female B217 and male B294, remained in this pack. This pack was considered a breeding pair for 2007.



Female B217 of the Fishhook pack sleeping near the pack's rendezvous site.

*Nate Borg*

### **Five Lakes Butte**

The sole radiocollared member of this pack, female B212 was monitored outside of the pack's normal home range during 2007 and was considered a disperser. B212 was located in the North Fork St. Joe River (approximately 35 miles [56 km] northeast of Five Lakes Butte) in September. There were reports of wolf sign in upper Chamberlin Creek and upper Vanderbilt Creek, areas within the traditional Five Lakes Butte home range, over summer 2007, but the status of this pack was unknown. The carcass of 1 wolf that died of unknown causes was recovered. This pack was not considered a breeding pair and there was no estimate of pack size.

### **Marble Mountain**

Program personnel captured and collared an adult female wolf (B314) in September 2006 bringing the number of marked wolves in this pack to two, including previously marked male B216. In 2007, female B360 was instrumented with a radiocollar as well. During trapping operations, a minimum of 4 adult gray wolves and 1 gray pup were observed. This reproductive pack was not counted as a breeding pair for 2007.

### **Tangle Creek**

The Tangle Creek pack was considered a Panhandle Region pack despite spending some time in the Clearwater Region as well. At the beginning of 2007, the Tangle Creek pack contained 2 radiocollared wolves, males B310 and B311. Monitoring efforts throughout the summer were



unsuccessful with the exceptions of locations of B310 in July and September in upper Floodwood Creek in the Clearwater Region. In late October the signal from B311 was discovered on mortality mode in the upper reaches of Dworshak Reservoir. The collar was recovered in November by the Clearwater County Sheriff's dive team and was determined to be an illegal kill. The signal from B310 was found on live mode approximately 0.25 mile (0.4 km) southeast from the mortality signal. An abundance of additional wolf sign was noted adjacent to the mortality site. Two wolves, the official pack count, were observed from an aerial survey of the area in December 2007. This pack was not counted as a breeding pair.

## **Documented Border Packs**

### **Boundary (ID)**

This border pack was tallied to Idaho for 2007. In spring 2007, the only marked member of the Boundary pack (female B296) was discovered with the newly documented Solomon Mountain pack. Program personnel surveyed the traditional Boundary pack area in September 2007 and determined the presence of at least 2 wolves, but were unable to mark any animals or quantify the pack size. In May 2007, a domestic calf was injured near Hall Mountain and designated "probable wolf related" by WS, but the calf survived its injuries and did not constitute a wolf depredation. In early December 2007, WS' personnel found the remains of a domestic calf (cause of death undetermined) that had been consumed by wolves and noted tracks indicating the presence of 5 wolves in the vicinity of Hall Mountain. The Boundary pack was considered a documented border pack (US/Canada border) but was not counted as a breeding pair.

### **Calder Mountain (ID)**

This border pack was tallied for Idaho in 2007. This pack was first documented in 2005; however, to date no wolves have been radiocollared. The Calder Mountain pack was considered a Panhandle Region border pack based on den and rendezvous site locations and spent time in both Idaho and Montana. Program personnel discovered rendezvous sites and tracks indicating at least 3 adults and 1 pup in September (official counts), although a report of 4 pups was unverified. The Calder Mountain pack was not counted as a breeding pair for 2007.

### **De Borgia (MT)**

This documented border pack was tallied by Montana in 2007. See the respective State's annual report for information on this pack.

### **Silver Lake (MT)**

This documented border pack was tallied by Montana. See the respective State's annual report for information on this pack.

### **Solomon Mountain (ID)**

This border pack was tallied for Idaho in 2007. The Solomon Mountain pack was discovered by monitoring female B296, originally a member of the Boundary pack. Program personnel monitored the radio signal at a likely den site in spring 2007 although no verification was accomplished. During summer, fall, and early winter 2007, the Solomon Mountain pack was located numerous times on both sides of the Idaho/Montana border by a MTFWP bear

researcher. He had several visual observations of the pack, as many as 8 wolves, but could not determine the presence of pups. In December 2007, the signal from B296 was discovered on mortality mode. This wolf was originally captured by black bear research personnel in August 2006 and fitted with a radiocollar that incorporated a cotton spacer designed to decompose and release the collar. It was assumed that the radiocollar was detached as designed in December. The site was not investigated due to its remote location and heavy snowfall. The Solomon Mountain pack was considered an Idaho pack but was not counted as a breeding pair for 2007.

### **Superior (MT)**

This documented border pack was tallied by Montana in 2007. See the respective State's annual report for information on this pack.

## **Suspected Resident Packs**

### **Bathtub Mountain**

Persistent observations and reports by IDFG personnel, outfitters, and sportsmen indicated the presence of a wolf pack in the vicinity of Bathtub Mountain along the divide between the upper St. Joe River and the Little North Fork Clearwater River. Bathtub Mountain is approximately 5 miles (8 km) northeast of Snow Peak, the identifying landmark of the Snow Peak wolf pack that existed in the late 1990s. Future monitoring will be required to determine the status of this suspected pack.

### **Kootenai Peak**

Persistent observations and reports by IDFG personnel, Bureau of Land Management and WS' personnel, and sportsmen indicate the presence of a wolf pack in the vicinity of Kootenai Peak, approximately 10 miles (16 km) northeast of St. Maries, Idaho, along the divide between the South Fork Coeur d'Alene River and the St. Joe River. Hunters reported observing wolf sign in Pine Creek, Latour Creek, Rochat Creek, and near Boise Peak. Personnel from the Bureau of Land Management reported, and IDFG personnel verified, wolf sign in Latour and Rochat Creeks. Wildlife Services' personnel observed 2 wolves in Hells Gulch and wolf sign in Willow Creek. Future monitoring will be required to determine the status of this suspected pack.

## **Other Documented Wolf Groups**

### **B212**








Lone wolf B212 (dispersing female from the Five Lakes Butte pack) was last located in September near Shefoot Mountain along the North Fork St. Joe River. Future monitoring will be required to determine the status of this radio-marked wolf.

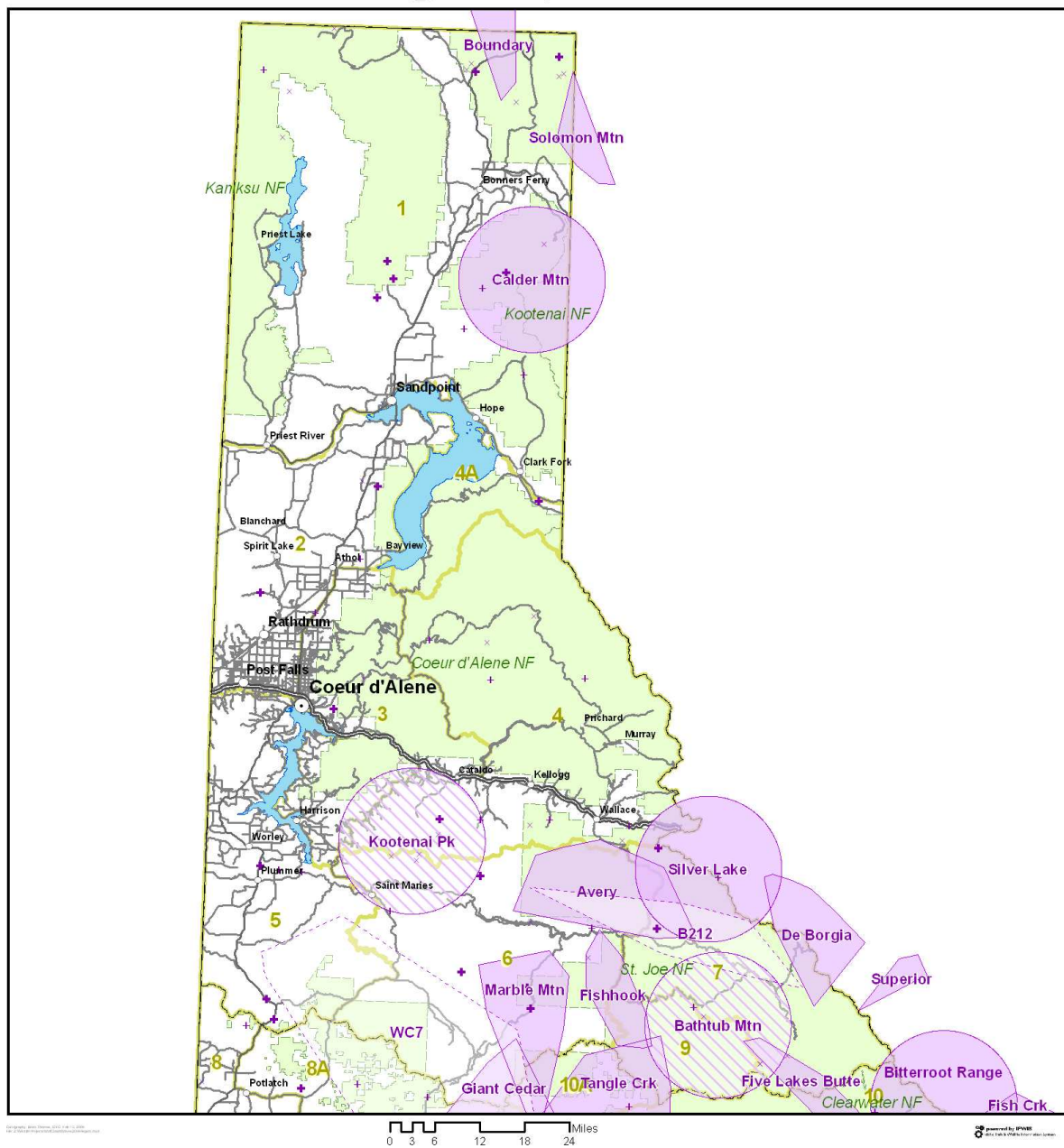
### Telemetry, Documented and Suspected Locations

2006-07 Telemetry and Research-based Locations \*

2007 Estimated Locations (Not Telemetry-based)\*

2007 Public Observations \*\*\*

- |   |  |   |  |  |                          |
|---|--|---|--|--|--------------------------|
|  | Documented Pack                        |  | Documented Pack                                      |  | Multiple Wolves Observed |
|  | Documented Group (Less than 4 animals) |  | Documented Group (Pair or Group less than 4 animals) |  | Single Wolf Sighted      |
|  | Documented Lone Wolf                   |  | Suspected Pack                                       |  | Not Specified            |
|   |  |  | Terminated Group                                     |  |                          |



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radio-collared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 6. Wolf pack activity and observations in the Panhandle Region, 2007.

Table 2. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game Panhandle Region, 2007.

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as							Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>			
			reprod. pack	breeding pair <sup>d</sup>	Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>							
DOCUMENTED PACK															
Avery	5	1(1)	YES	NO	0	0	1	1	0	1	1	0	0	0	0
Boundary ( ID) <sup>j</sup>	5	?	NO	NO	0	0	0	0	1	0	0	0	0	0	0
Calder Mtn (ID) <sup>j</sup>	4	1	YES	NO	0	0	0	0	0	0	0	0	0	0	0
De Borgia (MT) <sup>j</sup>															
Fishhook	8	2	YES	YES	0	0	0	0	0	2	0	0	0	0	0
Five Lakes Butte	?	?	NO	NO	0	0	0	1	1	0	0	0	0	0	0
Marble Mountain	5	1	YES	NO	0	0	0	0	0	3	1	0	0	0	0
Silver Lake (MT) <sup>j</sup>															
Solomon Mtn (ID) <sup>j</sup>	8	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Superior (MT) <sup>j</sup>															
Tangle Creek	2	?	NO	NO	0	0	1	0	0	1	0	0	0	0	0
SUBTOTAL	37	5(1)			0	0	2	2	2	7	2	0	0	0	0
SUSPECTED PACK															
Bathtub Mountain	?				0	0	0	0	0	0	0	0	0	0	0
Kootenai Peak	?				0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0			0	0	0	0	0	0	0	0	0	0	0
OTHER DOCUMENTED GROUP															
B212 <sup>k</sup>	?				0	0	0	0	0	0	0	1	0	0	0
SUBTOTAL	0	0			0	0	0	0	0	0	0	1	0	0	0
UNKNOWN															
	?				0	0	1	0	0	0	0	0	0	0	0
SUBTOTAL	0	0			0	0	1	0	0	0	0	0	0	0	0
REGIONAL TOTAL	37	5(1)			0	0	3	2	2	7	2	1	0	0	0

<sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.

<sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.

<sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

<sup>e</sup> Includes agency lethal control and legal take.

Table 2. Continued.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Does not include pups that disappeared before winter.

<sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>i</sup> Radiocollared wolves that became missing in 2007.

<sup>j</sup> Border pack officially tallied to (STATE); territory known/likely shared with Idaho. Data on these packs can be found in Rocky Mountain Wolf Recovery 2007 Annual Report; data for mortalities and/or depredations by non-Idaho border packs that occurred within Idaho are presented here.

<sup>k</sup> B212 moved into the Panhandle Region from the Clearwater Region and was monitored in the former until October 2007.

## **Clearwater Region**

The Clearwater Region maintained the highest pack total of all IDFG Regions, with 24 documented resident and 6 (two tallied for Idaho and four for Montana) documented border packs (Figure 7; Table 3). The non-radiocollared Magruder pack was removed from the list of documented packs due to lack of evidence of pack persistence in that area over the past 2 years. Nineteen reproductive packs, including Idaho's Bitterroot Range and Fish Creek border packs, produced 72 pups; seventeen of these qualified as breeding pairs. Fourteen documented wolf mortalities were recorded: five from other human causes, four from unknown causes, three from control, and two from natural causes. Livestock losses from wolf depredation in the Clearwater Region during 2007, as verified by WS, included 1 confirmed and 2 probable cattle killed. Sixteen wolves were captured (1 Selway pack pup was caught twice) in this region and 12 were fitted with radiocollars.

### **Law Enforcement Summary**

Conservation Officers, in consultation with USFWS Special Agents, investigated 11 incidents involving wolf mortalities in the Clearwater Region. In 4 cases the cause of death was unknown, 2 wolves were legally killed, 2 deaths were verified or suspected illegal kills, 2 mortalities were attributed to other human causes, and one was deemed a natural death.

### **Documented Resident Packs**

#### **Battle Ridge**

Biologists verified a rendezvous site and counted 2 pups (1 gray, 1 black) along with 1 black adult. A trapping effort was initiated, but was cut short due to fire danger, and further capture efforts were not possible due to fire closures. This first-year pack remains uncollared and had a minimum of 4 wolves (2 black, 1 gray, 1 unknown) and counted as a breeding pair for 2007.

#### **Bimerick Meadow**

Suspected breeding male B247 was not located after the May monitoring flight and his status since was unknown. Radio locations from female B289 led to the discovery of a rendezvous site where 4 gray pups were observed in mid-June. Minimum pack size, based upon aerial and field observations, was estimated at 7 wolves. This pack was a breeding pair for the third consecutive year.

#### **Chesimia**

After lethal control removed the alpha female and 3 other wolves in 2005, this pack did not display denning behavior in 2007 based upon telemetry locations of sole radiocollared wolf, 2-year-old female B222. In addition, the livestock operator in this pack's territory noted significantly less evidence of wolves in 2007 near her field camp, which was near the 2005 den site, and in the area in general, although in September she reported wolves harassing her herding dogs. By the end of 2007, B222 was located within traditional Chesimia pack territory, but it was unknown how many wolves were present in this pack. The Chesimia pack was not considered a breeding pair for 2007.

**Cold Springs**

Following the death of the alpha female, B206, in October 2005, there were no radiocollared individuals in this pack. Tracks of 2-3 individuals were located in late winter 2006/2007 in the Race Creek drainage, but investigations of areas previously used by this pack failed to detect further presence. The Cold Springs pack was not considered a breeding pair for 2007.

**Coolwater Ridge**

Multiple pups were heard howling in early August, but no visual pup count was obtained. Two subadult males, B344 and B346, were captured and radiocollared to retain telemetry contact with the pack; suspected alpha female B163's radiocollar was believed to have expired. A minimum of 6 wolves including 2 pups was detected in this pack based on field efforts. The Coolwater Ridge pack was a breeding pair in 2007.

**Deception**

Female B213, captured and radiocollared as a member of the Five Lakes Butte pack in 2004, was last located in that territory in September 2005. She was not detected again until January 2006, at which time she was located in the Kelly Creek drainage. She subsequently was located north of Lolo Pass before returning to the area adjacent to the southern edge of the Five Lakes Butte pack's territory, along the North Fork Clearwater River. Aerial telemetry locations during spring 2007 suggested B213 might have localized at a potential den site. Field investigations in mid-August led to detection of a rendezvous site where 4 gray pups were observed. A trapping effort resulted in the capture of 3 pups, one of which (female B352) was radiocollared, and the alpha male (B354) that was also radiocollared. B213's signal was detected on mortality mode during a monitoring flight in early December; her radio signal was located in the North Fork Clearwater River and it was believed that she was dead. Pack size at the end of the year was enumerated at 5 individuals. This first-year pack was not a breeding pair for 2007 because only a single adult remained.

**Eagle Mountain**

Two radiocollared wolves, suspected alpha male B136 and adult female B295, assisted biologists in locating this pack's den site in the Selway-Bitterroot Wilderness where 3 pups (1 black, 2 gray) were observed. Pack size for 2007 was estimated at a minimum of 8 wolves, based upon ground and aerial observations. This pack was a breeding pair for 2007.

**Earthquake Basin**

Radio tracking of wolves B274 and B275 led biologists to a den site where 2 black and 6 gray pups were observed, which equaled the Monumental Creek pack as the largest litters recorded for 2007. An uncollared pack member was killed in a vehicle collision in May. Based upon field observations, this pack was estimated to contain a minimum of 10 wolves. The Earthquake Basin pack was a 2007 breeding pair.

**Eldorado Creek**

Radio tracking of adult male B281 and possible alpha female B301 led a biologist to a rendezvous site where 4 gray pups were observed. Field observations indicated a minimum of 6 wolves in this pack. The Eldorado Creek pack was a breeding pair for 2007.

**Florence**

Males B200 and B201, captured in 2004, continued their membership with the pack. A den site area was investigated in May, at which time 7 gray pups were documented. Based upon field observations, a minimum of 10 wolves was present, similar to aerial sightings in both 2004 and 2005. Two wolves in this pack's territory were inadvertently killed during coyote lethal control efforts. Breeding pair status was attained by the Florence pack for 2007.

**Giant Cedar**

Localized aerial and ground locations during spring of radiocollared wolves B256 (adult) and B308 (yearling) indicated a probable den site. A litter of 5 gray pups was observed at a rendezvous site in mid-July. Two uncollared adult-sized wolves were also observed at that time. Pack size was estimated at a minimum of 6 individuals. B307, a pup captured in 2006, was found dead in April near Bovill, Idaho; necropsy revealed a deformed spine, so cause of death was determined as natural. The Giant Cedar pack was a breeding pair in 2007.

**Gospel Hump**

Contact with both radiocollared wolves, females B138 and B139, was lost during 2004, making monitoring of this pack difficult. A USFS trail crew reported persistent howling and tracks near the traditional den site in 2006, but no reports were received of wolf activity in this pack's home range and there was no field effort made to locate the pack during 2007. The status of this pack was unknown at the end of the year. The Gospel Hump pack was not reported as a breeding pair in 2007 and there was no estimate of pack size.

**Hemlock Ridge**

This pack produced its fifth documented litter in 2007. Based upon howling, a minimum of 2 pups was detected. At least 5 adults were accounted for based upon radiocollared animals and howling, which resulted in a minimum pack size estimate of 7 wolves for 2007. In addition to existing radiocollared wolves B207 and B210, another 2 adult wolves B329 (male) and B330 (female), were radiocollared in 2007. The Hemlock Ridge pack was a 2007 breeding pair.

**Indian Creek**

Five wolves were observed during an IDFG winter ungulate survey in 2004. In 2007, biologists documented tracks of at least 2 wolves and observed 1 black wolf in this area. One natural mortality of an uncollared wolf occurred in this pack's territory. This fourth-year pack did not count as a breeding pair for 2007.

**Kelly Creek**

Suspected alpha male B220 and female B237 were present at a rendezvous site in early August. One gray pup and 4 gray adult-sized wolves, including B220, were observed. B220's radio signal was detected on mortality mode during a November monitoring flight; the carcass was recovered in early December and will be necropsied to determine cause of death. Pack size, derived from ground efforts, was estimated at 5 wolves. The longstanding Kelly Creek pack was not a breeding pair in 2007 because just a single pup was detected.



### **Lochsa**

Female wolf B232, the sole radiocollared member of this pack, was not located after December 2006, but biologists were able to locate a rendezvous site in early August, where 4 gray pups were observed. One pup, B345, was captured and radiocollared. Two to 3 adults were heard howling, so pack size was estimated at a minimum of 6 individuals in 2007. B345 was aerially located in November approximately 25 miles (40 km) southwest of the rendezvous site; it was unknown whether other pack members were present at this time or if this was a dispersal movement. The Lochsa pack was a breeding pair for 2007.

### **Magruder**

Suspected alpha male B110 has not been located since June 2004, probably due to expiration of his radiocollar, and female B219 not since late May 2005. One effort to investigate this pack's previously used rendezvous sites was made, but it was hindered by wildfire-related closures, and little wolf sign was found. Status of this pack has been unknown for the past 2 years. Due to this lack of information, the Magruder pack was no longer considered a documented pack by the end of 2007.

### **O'Hara Point**

This pack did not use their traditional denning area for the second consecutive year in 2007, complicating efforts to document reproduction and conduct capture operations. Tracks from at least 3 wolves, possibly including a pup(s), were located within this pack's territory, suggesting that a litter may have been produced; however, no additional evidence was collected to verify this. The O'Hara Point pack was not a breeding pair in 2007 because reproduction was not verified.

### **Pettitbone Creek**

Five wolves were observed during an IDFG winter ungulate survey in 2004. In 2007, biologists verified a rendezvous site with at least 2 pups (based on pup tracks and scats) and 2 adults (based on howling), resulting in a minimum pack size estimate of 4 wolves. Due to fire danger, biologists were evacuated from the area the day after the rendezvous site was discovered, thus traps were not set. Biologists could not access the area again that season due to fire closures. This fourth-year pack was counted as a breeding pair for 2007.

### **Pilot Rock**

In late July, WS captured and radiocollared an adult female wolf, B342, and killed another in this pack's territory after 1 domestic calf was confirmed killed. In mid-August, while attempting to track B342, a biologist opportunistically observed a wolf pup cross the road in front of his vehicle. He was able to elicit a howling response from 4 pups at that time. The following day, 2 pups were observed (1 black, 1 gray). A second field effort resulted in a visual of 2 gray pups and estimated a minimum of 2-3 adult-sized wolves based upon howling. Minimum pack size was estimated at 6 wolves. This newly documented pack qualified as a breeding pair for 2007.

### **Pot Mountain**

Five wolves were observed on a slope of Pot Mountain during a winter ungulate survey conducted by IDFG in spring 2005, so this group was added as a documented pack for 2005. No

field effort was conducted in this area during 2007. No estimate of pack size was available and this pack was not a 2007 breeding pair.

### **Red River**

In early February, a coyote trapper inadvertently captured a black wolf near Elk City, Idaho. Before Program personnel could reach the scene to radiocollar the animal, it suffered a broken leg; the wolf was radiocollared (male B318) and released despite its injury. Subsequent aerial telemetry indicated that the wolf was sufficiently mobile enough to travel throughout the pack's territory. Ground-tracking of B318 in early June led biologists to a rendezvous site where 3-4 pups were heard howling. From ground efforts, minimum pack size was estimated at 5 individuals. The Red River pack was considered a breeding pair for 2007.

### **Selway**

One of the first packs to form in Idaho following the 1995 translocations from Canada, the Selway pack was returned to active monitoring status with the capture and radiocollaring of 2 pups in 2007. Investigation of a traditional rendezvous site in August led to the detection of the pack and the successful capture effort. Six black pups and 1 gray pup were observed, as well as 2 black adult-sized wolves; this pack had been composed solely of black wolves in the past. During a September monitoring flight, 13 black and 2 gray (1 adult, 1 pup) wolves were observed. The Selway pack was a breeding pair in 2007 and received its first radiocollared members (male pup B355 [captured twice] and female pup B356) since founding wolf B5's death in 2004.

### **Spirit Ridge**

This newly documented pack was fortuitously located while a capture operation was underway for the neighboring Coolwater Ridge pack. Subadult female B339 was trapped and radiocollared in July; B339 is gray and all previously known individuals in the Coolwater Ridge pack were black, creating suspicion about this wolf's pack membership. A rendezvous site was located where 2 gray adult-sized wolves were observed and a third was heard howling, and a minimum of 4 pups was detected from howling (2 gray pups were seen). Minimum pack size was estimated to be 7 wolves. The Spirit Ridge pack qualified as a breeding pair for 2007.

### **White Bird Creek**

Alpha female B284 was legally killed while the pack was harassing cattle in early April; she was pregnant and her death was believed to preclude this pack from reproducing in 2007. The remaining radiocollared wolf, male B285, was ground-tracked in late August and was seemingly alone both days he was observed. One domestic calf, probably killed by wolves, was attributed to this pack. A gray wolf was found dead in this pack's territory in early December; it was recorded as a mortality for this pack, although circumstances of its death suggested it may have been a dispersing wolf from another pack. Pack size was estimated at 4 wolves. The White Bird Creek pack was not considered a breeding pair in 2007.

## **Documented Border Packs**

### **Big Hole (MT)**

*This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack. One adult wolf died in Idaho as a result of capture-related activities.*

### **Bitterroot Range (ID)**

This documented border pack was tallied for Idaho in 2007. This newly documented and uncollared pack was located by MTFWP personnel in the Goose Creek drainage on the Idaho side of the Idaho/Montana border southeast of Hoodoo Pass. Three gray adults and 2 gray pups were observed, making this pack an Idaho breeding pair for 2007.

### **Brooks Creek (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

### **Fish Creek (ID)**

This documented border pack was tallied for Idaho in 2007. The Fish Creek pack denned in Idaho for the second consecutive year in 2007. Ground-tracking of radiocollared wolves B235 (suspected alpha female) and B236 (adult male) in the Kelly Creek drainage led to the discovery of a rendezvous site where 4 pups (3 gray, 1 possibly black) and 7-8 adults were observed. Approximately 1 week later, an aerial observation by MTFWP substantiated the pup count. This 9-member border pack, based upon a December aerial observation, was considered an Idaho breeding pair for 2007.

### **Lake Como (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

### **Trapper Peak (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

## **Suspected Resident Packs**

### **Grandad**

During 2006, a survey/trapping effort during the latter half of August detected 4 sets of wolf tracks and 1 wolf was temporarily captured, but managed to pull free from the trap. In July 2007, investigation of this area yielded 1 set of wolf tracks. A report was received from mid-September that indicated a possible location of a rendezvous site and 2 gray wolves were reportedly observed there. This site will be searched next year to determine this pack's status, and to possibly conduct capture efforts.

### **Tahoe**

Female B320 was captured in May during a control action initiated by WS where 1 domestic calf was probably killed and 2 others were confirmed injured by wolves. B320 was aerially monitored until August, at which time her signal was detected on mortality mode. Her remains were recovered and an investigation was undertaken by USFWS Law Enforcement. Local residents reported observing 5 wolves in February, though ground efforts following B320's death were unable to document presence or wolf sign in the areas she had frequented. Further efforts to determine wolf pack status in this area will be made in 2008.

### **Suspected Border Packs**

#### **Watchtower Creek (MT)**

This suspected border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

### **Other Documented Wolf Groups**

#### **Roaring Lion (ID)**

Biologists verified at least 2 wolves in this group based on track evidence. Multiple trapping efforts were unsuccessful.

#### **Saturday**

Biologists verified at least 2 wolves in this group based on track evidence. Trapping efforts were unsuccessful.

#### **WC7**

On 31 October 2006, male wolf WC7 was captured near Nanton, Canada (approximately 58 miles [94 km] south of Calgary, Alberta), and fitted with a GPS radiocollar. This wolf emigrated to the U.S. on 31 March 2007 (first location south of the international border). Satellite locations provided by Alberta Sustainable Resource Development indicated the wolf generally followed the Flathead River to Flathead Lake before making its way along the Clark Fork River in late April. It first was located in Idaho on 9 May 2007, north of Lookout Pass. Since 26 May 2007 it roamed an area encompassed by the towns of Santa, Elk River, and De Smet, Idaho, suggesting that it may have settled into a home range. Ground and aerial searches failed to detect this wolf's radio signal, thwarting efforts to ascertain whether WC7 was affiliated with other wolves. The GPS radiocollar was scheduled to automatically detach from around the wolf's neck at the end of October, but widely scattered fixes were obtained until late November that indicated the radiocollar may not have functioned as programmed. No further GPS fixes were obtained, suggesting the radiocollar expired or was otherwise no longer able to communicate with tracking satellites.

### **Monitoring Wolves in the Selway-Bitterroot Wilderness**

Due to difficulty in monitoring wolves in the wilderness areas of central Idaho, IDFG began intensively pursuing wolf capture efforts in the Selway-Bitterroot Wilderness Area in 2007 in

addition to ongoing efforts being conducted by the NPT. Initially, the IDFG requested permission from the USFS to helicopter-dart wolves in the Wilderness Area incidental to big game winter monitoring. Due to expense of conducting a National Environmental Policy Act analysis for landing in the wilderness, IDFG and the USFS instead provided matching funds and cooperated in an increased ground monitoring effort.

The main goal of the project was to capture and radiocollar wolves in the Selway-Bitterroot Wilderness. The IDFG crews were unable to capture a wolf during the first summer of this project. However, they did document 2 breeding pairs, 2 other wolf groups, and 1 suspected pack (Table 3). This information will be used to focus capture efforts in 2008. Nez Perce Tribe crews were able to capture 2 uncollared wolf packs adjacent to the Wilderness Area. These packs will likely use the Wilderness Area for at least part of each year. Two other packs (Eagle Mountain and Coolwater Ridge) continued to be monitored via radiocollars.

In addition to trapping attempts, the IDFG surveyed 575 miles of trails for wolf sign. The IDFG collected Global Positioning System (GPS) locations of wolf and elk sign along these trails and are using that dataset to test and further develop a model that predicts areas of high wolf use. Being able to accurately predict areas of high wolf use will be an important aspect of the standardized monitoring protocols.

Currently, there are 10 known or suspected groups of wolves that use the Selway-Bitterroot Wilderness Area for all or part of each year: the radiocollared, documented Coolwater Ridge, Eagle Mountain, Selway, and Spirit Ridge packs; the uncollared documented Battle Ridge, Indian Creek, and Pettibone Creek packs; the uncollared suspected Watchtower Creek pack; and 2 other wolf groups (Roaring Lion, Saturday) without radiocollared members. Six of the radiocollared and documented resident packs qualified as breeding pairs for 2007 (Table 3).

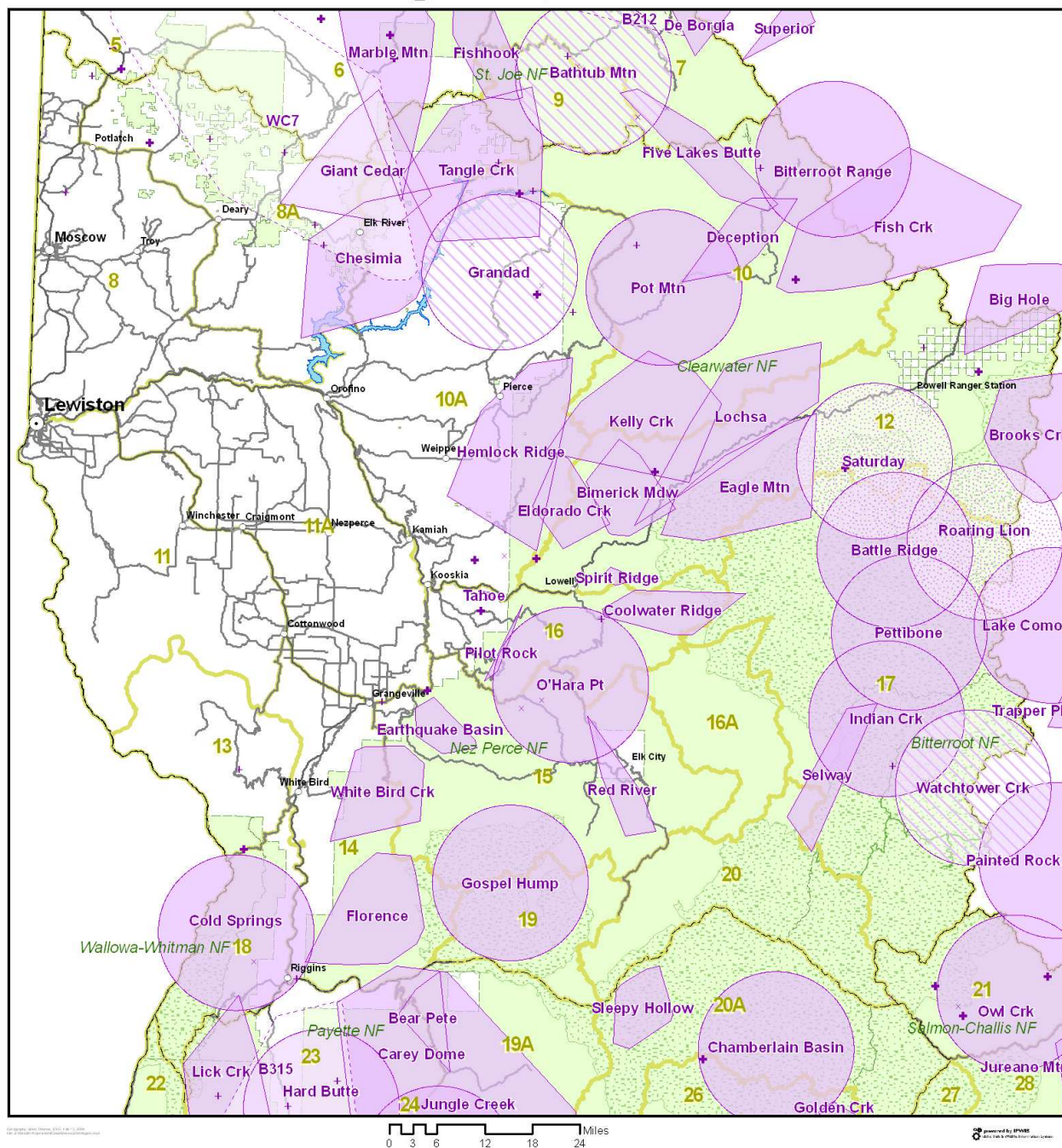
## 2007 Clearwater Region Wolf Activity

2006-07 Telemetry and Research-based Locations \* 2007 Estimated Locations (Not Telemetry-based)\*\* 2007 Public Observations \*\*\*

Documented Pack  
 Documented Group (Less than 4 animals)  
 Documented Lone Wolf

Documented Pack  
 Documented Group (Pair or Group less than 4 animals)  
 Suspected Pack  
 Terminated Group

+ Multiple Wolves Observed  
 + Single Wolf Sighted  
 x Not Specified



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radio-collared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 7. Wolf pack activity and observations in the Clearwater Region, 2007.

Table 3. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game Clearwater Region, 2007.

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as		Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>		Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
DOCUMENTED PACK															
Battle Ridge	4	2	YES	YES	0	0	0	0	0	0	0	0	0	0	0
Big Hole (MT) <sup>j</sup>							1								
Bimerick Meadow	7	4	YES	YES	0	0	0	0	0	1	0	1	0	0	0
Bitterroot Rge (ID) <sup>j</sup>	5	2	YES	YES	0	0	0	0	0	0	0	0	0	0	0
Brooks Crk (MT) <sup>j</sup>															
Chesimia	?	?	NO	NO	0	0	0	0	0	1	0	0	0	0	0
Cold Springs	2	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Coolwater Ridge	6	2	YES	YES	0	0	0	0	0	2	2	0	0	0	0
Deception	5	4	YES	NO	0	0	0	1	0	2	4	0	0	0	0
Eagle Mountain	8	3	YES	YES	0	0	0	0	0	2	0	0	0	0	0
Earthquake Basin	10	8	YES	YES	0	0	1	0	0	2	0	0	0	0	0
Eldorado Creek	6	4	YES	YES	0	0	0	0	0	2	0	0	0	0	0
Fish Creek (ID) <sup>j</sup>	9	4	YES	YES	0	0	0	0	0	2	0	0	0	0	0
Florence	10	7	YES	YES	0	0	2	0	0	2	0	0	0	0	0
Giant Cedar	6	5	YES	YES	1	0	0	0	0	2	0	0	0	0	0
Gospel Hump	?	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Hemlock Ridge	7	2	YES	YES	0	0	0	0	0	4	2	0	0	0	0
Indian Creek	2	?	NO	NO	1	0	0	0	0	0	0	0	0	0	0
Kelly Creek	5	1	YES	NO	0	0	0	1	0	1	0	0	0	0	0
Lake Como (MT) <sup>j</sup>															
Lochsa	6	4	YES	YES	0	0	0	0	0	1	1	1	0	0	0
Magruder <sup>k</sup>															
O'Hara Point	3	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Pettibone	4	2	YES	YES	0	0	0	0	0	0	0	0	0	0	0
Pilot Rock	6	4	YES	YES	0	1	0	0	0	1	1	0	1	0	0
Pot Mountain	?	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Red River	5	3	YES	YES	0	0	0	0	0	1	1	0	0	0	0
Selway	15	7	YES	YES	0	0	0	0	0	2	3	0	0	0	0
Spirit Ridge	7	4	YES	YES	0	0	0	0	0	1	1	0	0	0	0
Trapper Peak (MT) <sup>j</sup>															
White Bird Creek	4	0	NO	NO	0	1	0	1	0	1	0	0	(1)	0	0
SUBTOTAL	142	72			2	2	4	3	0	30	15	2	1(1)	0	0
SUSPECTED PACK															
Grandad	1				0	0	0	0	0	0	0	0	0	0	0



Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as		Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>		Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
Tahoe	?				0	0	0	1	0	0	1	0	(1)	0	0
Watchtower Crk (MT) <sup>j</sup>															
SUBTOTAL	1	0			0	0	0	1	0	0	1	0	(1)	0	0
OTHER DOCUMENTED GROUP															
Roaring Lion (ID) <sup>j</sup>	2				0	0	0	0	0	0	0	0	0	0	0
Saturday	2				0	0	0	0	0	0	0	0	0	0	0
WC7	1				0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	5	0			0	0	0	0	0	0	0	0	0	0	0
UNKNOWN															
	?				0	1	1	0	0	0	0	0	0	0	0
SUBTOTAL	0				0	1	1	0	0	0	0	0	0	0	0
REGIONAL TOTAL	148	72			2	3	5	4	0	30	16	2	1(2)	0	0

<sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.

<sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.

<sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

<sup>e</sup> Includes agency lethal control and legal take.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Does not include pups that disappeared before winter.

<sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>i</sup> Radiocollared wolves that became missing in 2007.

<sup>j</sup> Border pack officially tallied to (STATE); territory known/likely shared with Idaho. Data on these packs can be found in Rocky Mountain Wolf Recovery 2007 Annual Report; data for mortalities and/or depredations by non-Idaho border packs that occurred within Idaho are presented here.

<sup>k</sup> Group no longer considered extant due to agency lethal removal, lack of verified evidence for the preceding 2 years, or other cause.



## **McCall Subregion of the Southwest Region**

The McCall Subregion was occupied by 14 documented packs during 2007 (Figure 8; Table 4). Due to lethal control conducted in 2004 and 2005 and the documentation of new packs within their former home ranges, the Hazard Lake and Partridge Creek packs were removed as documented packs in 2007. The two new packs inhabiting this area (Hard Butte verified in 2007, Carey Dome verified in 2005) may consist of remnant members of the former resident packs, but because continuous monitoring was not possible due to loss of radiocollared wolves, new names were given to the packs now occupying those territories. The Oxbow pack was removed from the list of suspected packs due to lack of evidence of continued wolf presence in that area. Seven of 8 reproductive packs qualified as breeding pairs; the Carey Dome pack was disqualified because it was believed that only 1 adult wolf was present at the end of 2007. Documented mortalities ( $n = 13$ ) included control (agency removal and legal take;  $n = 10$ ), other human causes (illegal take, vehicle collision, etc.;  $n = 2$ ), and unknown ( $n = 1$ ). Confirmed ( $n = 8$ ) and probable ( $n = 2$ ) wolf-caused losses of cattle were attributed to the Blue Bunch and Hard Butte packs, and wolves believed affiliated with B327 and B349. Confirmed ( $n = 60$ ) and probable ( $n = 3$ ) wolf-caused losses of domestic sheep were attributed to the Blue Bunch, Carey Dome, Hard Butte, Jungle Creek, and Lick Creek packs. Confirmed ( $n = 4$ ) and probable ( $n = 3$ ) wolf-caused losses of domestic dogs were attributed to the Blue Bunch and Hard Butte packs. Six wolves were captured by Program personnel that resulted in the placement of 5 new radiocollars (1 radiocollar was shed by a Carey Dome pack pup), and replacement of 1 existing radiocollar.

## **Law Enforcement Summary**

Conservation Officers, in consultation with USFWS Special Agents, investigated 4 incidents involving wolf mortalities in the McCall Subregion. One wolf was recovered along Highway 95, having died of unknown cause. A second wolf carcass was recovered west of Riggins, Idaho, and was determined to have been struck by a vehicle. The third incident involved the shooting of a wolf harassing livestock, and it was determined to be a legal take under the 10(j) Rule. A fourth wolf was located on mortality mode during a monitoring flight, and the resulting investigation indicated the wolf was illegally killed.

## **Documented Resident Packs**

### **Bear Pete**

Male wolf B157, formerly a member of the Jungle Creek pack, began using areas outside of that pack's home range after September 2006. It was unknown whether the entire Jungle Creek pack had shifted winter use, as they did in 2005, or if B157 had separated from the pack (he was aerielly observed in early March 2007 with 1 other wolf). A capture effort in mid-July resulted in the replacement of B157's radiocollar and his new mate, B331, receiving her initial radiocollar. Six pups were observed within approximately 0.5 miles (0.8 km) of the capture site. B157, B331, and 6 gray pups were observed during the August monitoring flight in a meadow west of Marshall Lake; minimum pack size was 8 individuals. This first-year pack was a breeding pair for 2007.

### **Blue Bunch**

Founded by alpha female B218 and an unknown male, this pack produced its third litter of pups in 2007. The den site was located near their namesake ridge, where 3 gray pups were observed in late June. Field and aerial observations indicated the minimum estimated pack size was 7 individuals. This pack was implicated in livestock depredations where 3 domestic sheep were confirmed killed and 1 calf was listed as a probable wolf-kill. Three domestic dogs were also confirmed killed by this pack, and another was classified as a probable wolf kill. The Blue Bunch pack was a breeding pair for 2007.

### **Carey Dome**

During control actions in 2006, females B309 and B315 (see Other Documented Wolf Groups), were captured and radiocollared; they were believed to be members of the Carey Dome pack, although the actual number of packs and wolf membership was not certain in this area due to disruption of wolf social structure from continued wolf-livestock conflicts and attendant lethal wolf removals. Four pups were observed during mid-July, though additional pups were likely present based upon howling. Three wolves from this pack were known to have died in 2007. Two adult males were lethally controlled (WS attributed 7 confirmed and 1 probable wolf-killed domestic sheep to this pack) and another wolf was killed by a vehicle on the fringe of the pack's home range. Based upon aerial sightings, ground efforts, and lethal control activities, it was believed that by the end of 2007, this pack was minimally comprised of alpha female B309 and her 4+ pups. The Carey Dome pack was not a breeding pair in 2007 because only 1 adult wolf was present in this pack at the end of the year.

### **Chamberlain Basin**

Five gray pups were observed and a sixth was heard howling in mid-July. In addition, 5 adults were observed. The carcass and radiocollar of the pack's original alpha female, B16, was discovered by a hiker near the mouth of Sabe Creek on the north side of the Salmon River. Based upon level of decomposition, it was likely that B16 died during 2006. Minimum estimated pack size was 11 wolves. The Chamberlain Basin pack was a 2007 breeding pair.

### **Golden Creek**

Researchers from the University of Idaho's Taylor Ranch field station observed 4 gray pups near the suspected den area. Possible alpha male B319 was captured in early April, joining suspected alpha female B229 as radiocollared individuals. Pack size was estimated at a minimum of 7 individuals. The Golden Creek pack was a breeding pair for 2007.

### **Hard Butte**

This pack occupied at least part of the former Hazard Lake pack's territory (*see* Hazard Lake). Following up on reports from hunters during bow-hunting season, biologists were able to document the presence of at least 3 pups and multiple adults based upon howling. A capture effort was initiated, but pack mobility and the presence of sheep herding/guarding dogs limited the scope of the operation, and no wolves were caught. The origin of this pack was unknown; they may be remnants of the Hazard Lake pack, which was heavily controlled in 2004 (including removal of all radiocollared individuals), or they may have derived from wolves that recolonized this area following the elimination of the previous pack. This pack was involved in 8 confirmed

and 1 probable wolf-killed sheep plus 1 confirmed calf depredation. One pet dog was killed and 2 others were categorized as probable wolf-kills by this pack. An adult male wolf, probably a member of this pack, was lethally controlled in late November northeast of New Meadows, Idaho. Minimum estimated pack size was 5 wolves. The Hard Butte pack was considered a breeding pair in 2007.

### **Hazard Lake**

This pack has been removed from the list of documented packs and the Hard Butte pack occupied this territory.

### **Jungle Creek**

All previously documented rendezvous sites for this pack were investigated in June, but none of them were in use and very little wolf sign was seen in those areas. A University of Montana research crew heard multiple wolves howling near the Twentymile Creek drainage prior to the rendezvous site searches, but with the departure of B157 (*see* Bear Pete), monitoring of this uncollared group was difficult. Reports of black and gray wolves were received during summer from Victor and Pearl Creeks, drainages known to have been used by the pack in the past, but all previously known wolves in this pack were gray individuals. In mid-August, wolves were confirmed to have killed 41 sheep near Josephine Lake north of McCall, Idaho; another 15 sheep were injured. Wildlife Services' personnel opportunistically killed 4 wolves during depredation investigation/control activities over 2 days: 2 adult, black females; 1 adult, black male; and 1 adult, gray male. Multiple wolves were heard howling by the WS field agent the following day. Based upon the coincidence of pelage colors reported from sightings and the wolves lethally removed, it was believed that wolves reported from Victor/Pearl Creeks were responsible for the depredations. A second incidence of sheep depredation occurred in September, at which time WS attempted to radiocollar the first individual captured, but no wolves were caught. Pack size was estimated at a minimum of 4 individuals at the end of 2007. This pack was not reported as a breeding pair for 2007 as there was no information pertaining to their reproductive status.

### **Lick Creek**

The Lick Creek pack's den area was located in late May, but due to heavy vegetative cover only 2 gray pups were observed at that time. A second field effort in early July was able to document 6 gray pups and the presence of 2 adult-sized wolves, including suspected alpha female B288. Minimum pack size was estimated at 8 wolves. This pack was implicated in the loss of 1 confirmed and 1 probable sheep killed by wolves. The Lick Creek pack was a breeding pair for 2007.

### **Monumental Creek**

Females B250 and B287 remained with the pack, though B287 was located only sporadically throughout the year. The minimum pack estimate was 15 gray wolves (8 pups, 7 adults) based upon an observation at the den/rendezvous site. This pack qualified as a 2007 breeding pair.

### **Orphan**

With no radiocollared wolves to assist biologists, this pack was difficult to monitor. Sightings during spring suggested that wolves were present, but the number of wolves was undetermined.

Residents of a fire camp in Scott Valley, where the pack's rendezvous site was found in 2005, reported hearing and observing what they believed to be multiple wolves howling, including pups. Several survey efforts failed to reveal wolf activity or evidence of reproduction. Male wolf B327 (see Other Documented Wolf Groups) was captured in the former Gold Fork pack's territory, but was often located in the Orphan pack's home range. Pack and reproductive status of the Orphan pack was unknown at the end of 2007, so it was not considered a breeding pair.

### **Partridge Creek**

This pack has been removed from the list of documented because the Carey Dome and Bear Pete packs occupied this territory.

### **Sleepy Hollow**

Male B148, captured as a member of the Big Hole pack, and male B181, captured as a member of the Partridge Creek pack, have adjacent radio frequencies. Both of these wolves dispersed from their respective packs and radio contact was lost for a time on B148 (from late October 2003 until January 2005). A signal from one of these wolves was detected in what became the Sleepy Hollow pack's home range, but due to frequency drift, Program personnel were unable to identify which of these wolves was being monitored. Spring telemetry locations were inconclusive as to the denning status of this pack, and it was hoped that the pack would move to a more readily accessible location where reproductive status could be assessed. Wildfires prevented any survey efforts, but an aerial observation in October spotted only 3 wolves, though this was likely an incomplete count compared with 2006 data. During a November monitoring flight, the radiocollared individual was detected on mortality mode. An attempt to recover the carcass/radiocollar was initiated, but no further radio signal was heard, suggesting the radiocollar's battery expired before it could be recovered; this was recorded as a suspected mortality. The Sleepy Hollow pack was not considered a breeding pair in 2007 and a minimum of 2 wolves remained.

### **Stolle Meadows**

Aerial telemetry locations suggested that suspected alpha female B249 had denned in spring 2007. Investigation of this area indicated prolonged wolf use, but no evidence of pups or a den was found. Ground and aerial observations from 2006 suggested that perhaps only the 2 radiocollared wolves, B249 and male B259 were present. Wildfires prevented access for much of the field season, but prior to area restrictions, a University of Montana research crew located a minimum of 3 sets of wolf tracks and a recreationist reported observing 5-8 wolves along the South Fork Salmon River. An aerial observation in October spotted 3 black and 1 gray wolves, while B259 (white) was likely not seen. Based upon an aerial observation and reports, minimum estimated pack size was 4 individuals. The Stolle Meadows pack was not counted as a breeding pair for the second consecutive year.

### **Thunder Mountain**

Program efforts to document continued wolf occupancy of this pack's territory were successful when wolf tracks and scats were located in the Indian Creek drainage; however, subsequent wildfires in the area thwarted plans for a capture operation and no further field efforts were undertaken. A hunting outfitter with a camp at Riordan Lake reported multiple sightings of 7

wolves there in 2006, but this information could not be verified. No evidence of reproduction was obtained, so the Thunder Mountain pack was not recorded as a breeding pair for 2007. Additional monitoring efforts will be made to determine this packs status in 2008.

### **Wolf Fang**

Suspected alpha female B282, radiocollared in June 2006, was not located from October 2006 through March 2007; this pack's whereabouts were unknown during this time. In April, a ground crew detected B282's radio signal in the Big Creek drainage near where this pack's pups were observed in 2006. Five gray wolves were observed, but no evidence of reproduction was found and the wolves moved extensively at a time when they should have been localized if pups were present. Three gray wolves were observed during an October monitoring flight, but based upon field efforts the minimum pack size estimate was 5 wolves. This pack was not considered a breeding pair for 2007.

## **Suspected Resident Packs**

### **Oxbow**

Due to a lack of information for the past 2 years, the Oxbow pack was no longer considered a suspected pack by the end of 2007.

## **Other Documented Wolf Groups**

### **B219**

During a September monitoring flight, B219's radio signal was located on mortality mode near Rainbow Lake in the Boise National Forest. She was initially captured and radiocollared as a member of the Magruder pack in 2004, and had not been located since May 2005. Skeletal remains and her radiocollar were retrieved at a site approximately 55 miles (88 km) from the Magruder pack's home range and based upon the condition of the remains, it was estimated that B219 likely died prior to 2007; an investigation was opened by USFWS Law Enforcement division.

### **B315**

Female B315 was captured and radiocollared during a control action in October 2006 south of Hartley Meadows (north of McCall, Idaho). She remained in the vicinity of her capture until December 2006, at which time she was aurally located along the Salmon River. In January 2007, she was aurally located a few miles south of Riggins, Idaho, along the Little Salmon River. B315's signal was not detected again until September 2007, when she was located in the headwaters of Rapid River on the west side of the Little Salmon River drainage. Pack affiliation, if any, and reproductive status were unknown.

### **B327**

Male wolf B327 was captured by WS during a control action and fitted with a GPS radiocollar. B327 was trapped in the former Gold Fork pack's home range, but was also located within the Orphan pack's territory, including their 2005 rendezvous site. Ground-tracking efforts to determine his affiliation with other wolves were unsuccessful; B327 appeared to be alone each

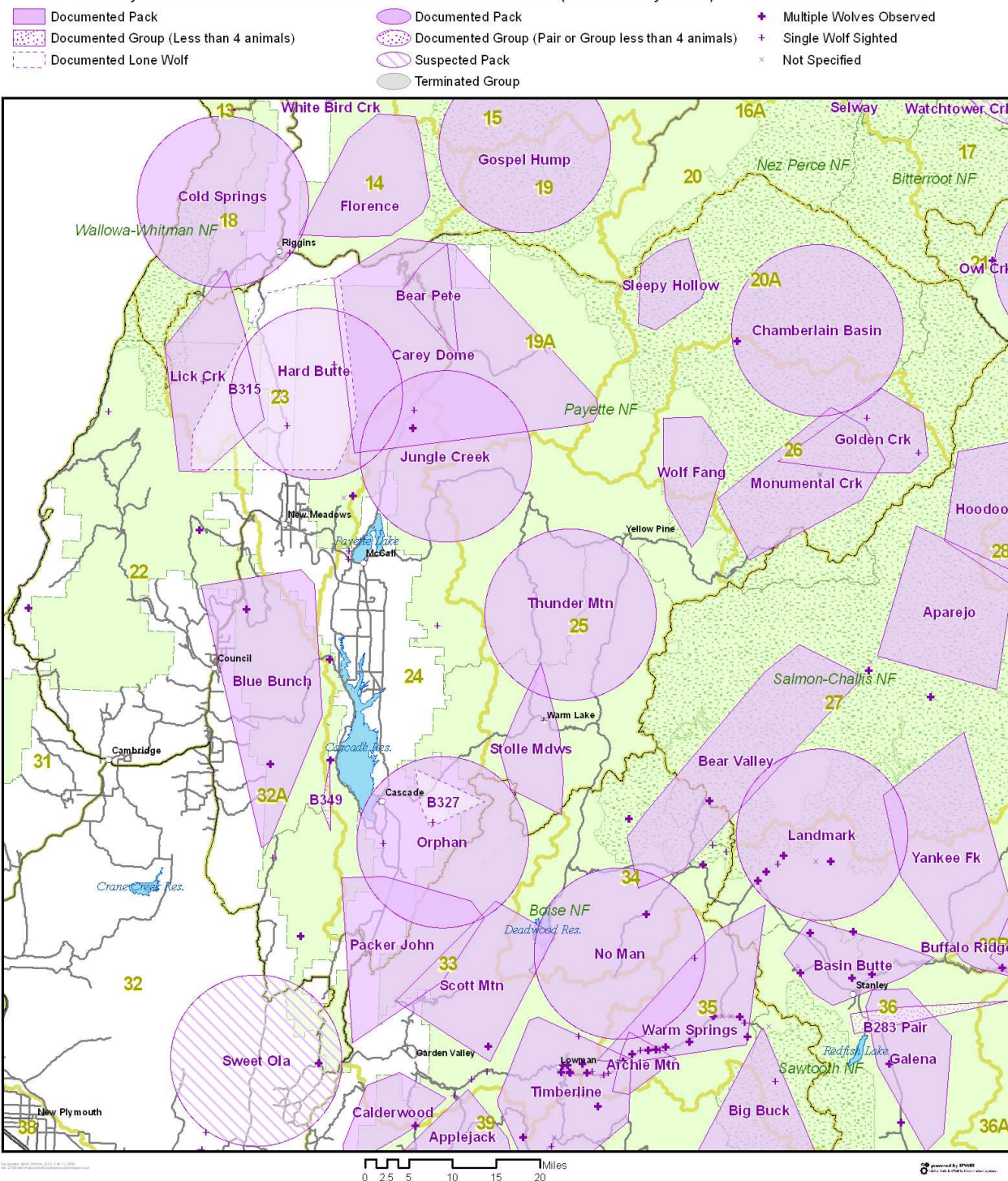
time he was located. Six confirmed calf losses and 1 probable calf loss occurred during the time span preceding B327's capture, during the control action, and also following his capture.

**B349**

Male wolf B349 was captured and radiocollared in mid-August by WS. Two other wolves were lethally removed during this control action. Following these removals, tracks of at least 2 wolves were found near a recent aerial location of B349. During the October monitoring flight B349's signal was detected on mortality mode; USFWS Law Enforcement agents investigated the following day, collected the carcass, and opened an active case. The loss of B349 will make determination of wolf status in this area more difficult to ascertain.

## 2007 McCall SubRegion Wolf Activity

2006-07 Telemetry and Research-based Locations \* 2007 Estimated Locations (Not Telemetry-based)\*\* 2007 Public Observations \*\*\*



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radiocollared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 8. Wolf pack activity and observations in the McCall Subregion, 2007.



Table 4. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game McCall Subregion, 2007.

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as		Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>		Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
DOCUMENTED PACK															
Bear Pete	8	6	YES	YES	0	0	0	0	0	2	2	0	0	0	0
Blue Bunch	7	3	YES	YES	0	0	0	0	0	1	0	0	(1)	3	3(1)
Carey Dome	5	4	YES	NO	0	2	1	0	0	1	1	0	0	7(1)	0
Chamberlain Basin	11	6	YES	YES	0	0	0	0	0	0	0	0	0	0	0
Golden Creek	7	4	YES	YES	0	0	0	0	0	2	1	0	0	0	0
Hard Butte	5	3	YES	YES	0	1	0	0	0	0	0	0	1	8(1)	1(2)
Hazard Lake <sup>j</sup>															
Jungle Creek	4	?	NO	NO	0	4	0	0	0	0	0	0	0	41	0
Lick Creek	8	6	YES	YES	0	0	0	0	0	1	0	0	0	1(1)	0
Monumental Creek	15	8	YES	YES	0	0	0	0	0	2	0	0	0	0	0
Orphan	?	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Partridge Creek <sup>j</sup>															
Sleepy Hollow	2	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Stolle Meadows	4	?	NO	NO	0	0	0	0	0	2	0	0	0	0	0
Thunder Mountain	?	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Wolf Fang	5	0	NO	NO	0	0	0	0	0	1	0	0	0	0	0
SUBTOTAL	81	40			0	7	1	0	0	12	4	0	1(1)	60(3)	4(3)
SUSPECTED PACK															
Oxbow <sup>j</sup>															
SUBTOTAL	0	0			0	0	0	0	0	0	0	0	0	0	0
OTHER DOCUMENTED GROUP															
B219	0				0	0	0	0 <sup>k</sup>	0	0	0	0	0	0	0
B315	1				0	0	0	0	0	1	0	0	0	0	0
B327	1				0	0	0	0	0	1	1	0	6(1)	0	0
B349	1				0	2	1	0	0	0	1	0	1 <sup>l</sup>	0	0
SUBTOTAL	3	0			0	2	1	0	0	2	2	0	7(1)	0	0
UNKNOWN															
	?				0	1	0	1	0	0	0	0	0	0	0
SUBTOTAL	0	0			0	1	0	1	0	0	0	0	0	0	0
REGIONAL TOTAL	84	40			0	10	2	1	0	14	6	0	8(2)	60(3)	4(3)



Table 4. Continued.

- <sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.
- <sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.
- <sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.
- <sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.
- <sup>e</sup> Includes agency lethal control and legal take.
- <sup>f</sup> Includes all other human-related deaths.
- <sup>g</sup> Does not include pups that disappeared before winter.
- <sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.
- <sup>i</sup> Radiocollared wolves that became missing in 2007.
- <sup>j</sup> Group no longer considered extant due to agency lethal removal, lack of verified evidence for the preceding 2 years, or other cause.
- <sup>k</sup> B219's remains were located in 2007, but condition of the remains suggested wolf likely died in 2006.
- <sup>l</sup> Depredation occurred in Nampa Subregion.

## **Nampa Subregion of the Southwest Region**

During 2007, the Nampa Subregion portion of the Southwest Region was home to 13 documented and 1 suspected wolf packs (Figure 9; Table 5). Eight documented packs were counted as breeding pairs. All 6 documented mortalities were human caused. Confirmed sheep losses were attributed to the Applejack, High Prairie, Packer John, Steel Mountain, and Timberline packs, and unknown wolves. Confirmed cattle losses were attributed to the documented High Prairie pack, the suspected Sweet Ola pack, and unknown wolves. Five wolves were removed in total from the High Prairie, Packer John, and Steel Mountain packs. Ten wolves were captured and radiocollared.

### **Law Enforcement Summary**

Conservation Officers, in consultation with USFWS Special Agents, investigated 1 report of a dead wolf. This was a radiocollared wolf which was detected on mortality signal. It was determined to be illegally shot.

### **Documented Resident Packs**

#### **Applejack**

Female B306 remained the sole radiocollared member of this pack throughout the year. She was captured during a control action resulting from 4 confirmed sheep losses during 2 depredation incidents. She was released unharmed as the control action called for removal of uncollared wolves only. Four gray pups were produced. This first-year pack had a minimum of 5 gray wolves and was counted as a breeding pair for 2007.

#### **Archie Mountain**

This pack was newly documented with the capture of B341 in the summer. Five gray pups were subsequently counted. This first-year pack had a minimum of 7 gray wolves and was counted as a breeding pair for 2007.



Archie Mountain pack on a winter day.

*Michael Lucid*

### **Bear Valley**

One wolf was captured in this pack, resulting in a total of 2 radiocollared wolves, female B215 and male B332. The Bear Valley pack produced 4 gray pups. This fourth-year pack had a minimum of 14 gray wolves and was counted as a breeding pair for 2007.

### **Big Buck**

Alpha female B255 remained the sole radiocollared member of this pack throughout the year. In the spring, IDFG personnel responded to citizens who were concerned because this pack was localized near a horse pasture. Hazing with cracker shells was successful at pushing the wolves from the area. The citizens were provided with a Radio-Activated Guard box, which is used for non-lethal hazing of wolves. Based on tracking evidence, biologists estimated at least 2 pups were produced. This second year pack had a minimum of 4 wolves and was counted as a breeding pair for 2007.



Big Buck pack at a stand off with an elk.

*Michael Lucid*

### **Calderwood**

Alpha female B141 remained the sole radiocollared wolf in this pack. Ground monitoring led to an observation of 1 gray pup. This fourth-year pack contained a minimum of 4 gray wolves and was not counted as a breeding pair for 2007.

### **High Prairie**

In April, a coyote trapper contacted IDFG to report he had incidentally captured a wolf. The wolf was female B170, a disperser from the Galena pack; she had last been detected as a member of the Galena pack in 2005. She appeared to have lactated in the past, suggesting her status as an alpha (breeder) in the High Prairie pack. She was fitted with a new radiocollar and released. In 2007, she produced at least 1 pup and two of her pack mates were removed in a control action that resulted from 8 confirmed sheep losses, 1 confirmed cattle depredation, and 1 probable dog depredation. This newly documented pack had a minimum of 3 gray wolves and was not counted as a breeding pair for 2007.



B170 recovering nicely after capture.

*Michael Lucid*

### **No Man**

This newly documented pack produced a minimum of 1 pup and contained a minimum of 2 adults. Multiple trapping attempts were unsuccessful. This pack was not counted as a breeding pair for 2007.

### **Packer John**

Suspected alpha male B262's radio signal was detected on mortality in April. The cause of death was determined to be illegal take. This left alpha female B205 as the remaining radiocollared individual. B205 was recaptured in the summer and fitted with a GPS radiocollar. This pack produced a minimum of 3 pups. The Packer John pack was implicated in 21 confirmed sheep losses resulting in a control action which removed 1 uncollared wolf. This fourth-year pack had a minimum of 3 wolves (2 gray, 1 black) and was not counted as a breeding pair for 2007.





Packer John pack pups in the den.

*Nate Borg*

### **Scott Mountain**

Multiple trapping attempts were unsuccessful in returning this pack to active monitoring status. Personnel conducting howling surveys heard a minimum of 2 pups and 2 adults respond to them while surveying an area near a historic rendezvous site. This seventh-year pack had a minimum of 4 wolves and counted as a breeding pair for 2007.

### **Steel Mountain**

Alpha wolves B189 and R241 were being monitored at the onset of 2007. Subordinate male B271 had last been detected in late December 2006. He was not found in Idaho again, but was eventually observed in Yellowstone National Park in November 2007. At the end of 2007, he appeared to have paired with a dispersing female from the Slough Creek pack. During summer 2007, B325 was captured and fitted with a GPS radiocollar. This radiocollar automatically detached from the wolf's neck in the fall so it could be collected for data retrieval. Biologists counted a minimum of 2 pups in this pack. Two wolves were killed during a control action in response to livestock depredation of 9 confirmed sheep and 1 probable losses. B189 was also recaptured during the control action and was re-collared and released. This fifth-year pack had a minimum of 9 wolves (6 gray, 3 black) and was counted as a breeding pair for 2007.

### **Thorn Creek**

This newly documented pack had 1 active radiocollared wolf, female B340. A minimum of 4 gray pups was produced. Pack size and prior tracking evidence indicated this pack may have been in existence since at least 2006. This pack contained a minimum of 12 gray wolves and was counted as a breeding pair for 2007.

### **Timberline**

Two Timberline pack wolves, B265 and B266, were being monitored at the onset of 2007. However, both of these wolves were missing by the end of April. In June, a GPS radiocollar was fitted on B322. The Timberline pack produced at least 2 gray pups and was implicated in 9

confirmed and 4 probable sheep losses. This sixth-year pack had a minimum of 11 gray wolves and was counted as a breeding pair for 2007.

### **Warm Springs**

Female B283 was the sole radiocollared member of this pack at the beginning of the year. In the fall, B283 was apparently disassociating from the pack. In November, she was seen with another wolf east of Stanley, Idaho, far from the Warm Springs pack's territory. A minimum of 1 pup was produced by the Warm Springs pack. In December, alpha female B109 was recaptured. Her non-functioning radiocollar was removed and she was fitted with a GPS radiocollar. This pack had a minimum of 5 gray wolves and did not count as a breeding pair for 2007.

### **Suspected Packs**

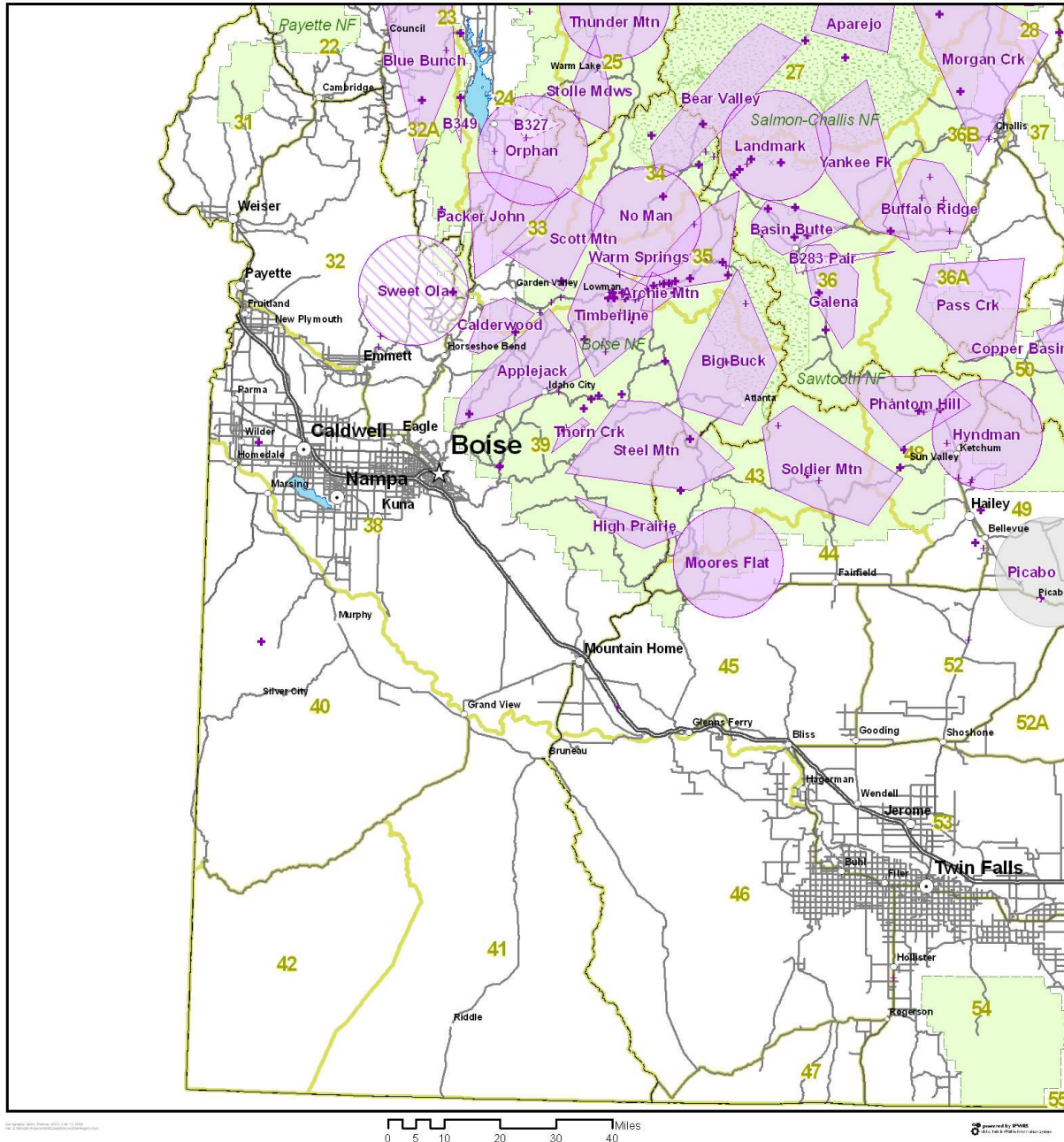
#### **Sweet Ola**

Multiple reports indicated there may be an undocumented pack in this area. There were 2 confirmed cattle depredations and 1 probable dog depredation in this area.

# 2007 Southwest Region Wolf Activity

Telemetry, Documented and Suspected Locations

- 2006-07 Telemetry and Research-based Locations \* 2007 Estimated Locations (Not Telemetry-based)\*\* 2007 Public Observations \*\*\*
- Documented Pack
  - Documented Group (Less than 4 animals)
  - Documented Lone Wolf
  - Documented Pack
  - Documented Group (Pair or Group less than 4 animals)
  - Suspected Pack
  - Terminated Group
  - Multiple Wolves Observed
  - Single Wolf Sighted
  - Not Specified



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radiocollared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 9. Wolf pack activity and observations in the Nampa Subregion, 2007.



*Table 5. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game Nampa Subregion, 2007.*

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as		Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>		Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
DOCUMENTED PACK															
Applejack	5	4	YES	YES	0	0	0	0	0	1	1	0	0	4	0
Archie Mountain	7	5	YES	YES	0	0	0	0	0	1	1	0	0	0	0
Bear Valley	14	4	YES	YES	0	0	0	0	0	2	1	0	0	0	0
Big Buck	4	2	YES	YES	0	0	0	0	0	1	0	0	0	0	0
Calderwood	4	1	YES	NO	0	0	0	0	0	1	0	0	0	0	0
High Prairie	3	1	YES	NO	0	2	0	0	0	1	1	0	1	8	(1)
No Man	3	1	YES	NO	0	0	0	0	0	0	0	0	0	0	0
Packer John	3	3	YES	NO	0	1	1	0	0	1	1	0	0	21 <sup>j</sup>	0
Scott Mountain	4	2	YES	YES	0	0	0	0	0	0	0	0	0	0	0
Steel Mountain	9	2	YES	YES	0	2	0	0	1	2	2	0	0	9(1)	0
Thorn Creek	12	4	YES	YES	0	0	0	0	0	1	1	0	0	0	0
Timberline	11	2	YES	YES	0	0	0	0	0	1	1	2	0	9(4)	0
Warm Springs	5	1	YES	NO	0	0	0	0	1	1	1	0	0	0	0
SUBTOTAL	84	32			0	5	1	0	2	13	10	2	1	51(5)	(1)
SUSPECTED PACK															
Sweet Ola	1				0	0	0	0	0	0	0	0	2	0	(1)
SUBTOTAL	1	0			0	0	0	0	0	0	0	0	2	0	(1)
UNKNOWN															
	?				0	0	0	0	0	0	0	0	0	5	0
SUBTOTAL	0	0			0	0	0	0	0	0	0	0	0	5	0
REGIONAL TOTAL	85	32			0	5	1	0	2	13	10	2	3	56(5)	(2)

<sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.

<sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.

<sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

<sup>e</sup> Includes agency lethal control and legal take.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Does not include pups that disappeared before winter.

Table 5. Continued.

<sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>i</sup> Radiocollared wolves that became missing in 2007.

<sup>j</sup> Depredation occurred in McCall Subregion.

## **Magic Valley Region**

During 2007, the Magic Valley Region was home to 4 documented wolf packs and 1 other documented wolf group. One documented pack counted as a breeding pair (Figure 10; Table 6). Eleven documented mortalities were the result of control actions, and 1 wolf was shot legally under the 10(j) Rule. Confirmed ( $n = 9$ ) and probable ( $n = 4$ ) cattle losses were attributed to the Moores Flat pack, and the Picabo group, which was subsequently removed. Confirmed ( $n = 41$ ) and probable ( $n = 7$ ) sheep losses were attributed to the Moores Flat, Phantom Hill, and Soldier Mountain packs, and unknown wolves. The Steel Mountain pack also killed sheep in the Magic Valley Region; however, these losses are recorded in the Nampa Subregion section (Table 5). Dog losses were attributed to the Moores Flat and Phantom Hill packs. Three wolves were captured and radiocollared in 2007.

## **Law Enforcement Summary**

Conservation Officers investigated the shooting of a wolf harassing livestock; the take was considered a legal shooting under the 10(j) Rule. There was no documented illegal take in this region in 2007.

## **Documented Resident Packs**

### **Hyndman**

In 2005, agency personnel documented this pack as reproductive. Multiple reports indicated wolves may still be using this area in 2007, however, pack status could not be confirmed.

### **Moores Flat**

This newly documented pack produced a minimum of 6 gray pups. One wolf was captured and radiocollared, but was subsequently lethally removed due to multiple livestock depredations. This pack was implicated in 4 confirmed cattle, 4 probable cattle, 27 confirmed sheep, and 1 confirmed dog depredations. A total of 9 wolves were removed. At the end of 2007, at least 2 wolves were believed to remain. This first-year pack was not counted as a breeding pair for 2007.

### **Phantom Hill**

This pack began making its appearance in the Hailey, Idaho, area in late winter. One female (B326) and 1 male (B333) were captured during summer. This pack was confirmed to have killed 14 sheep and probably killed 3 additional sheep. They were confirmed to have killed 2 dogs. Biologists observed 3 black pups. This first-year pack had a minimum of 5 black wolves and was counted as a breeding pair for 2007.

### **Soldier Mountain**

Subordinate female B192 and alpha male B149 were being monitored at the onset of 2007. B192 was last located during a June monitoring flight and has not been found since. Late winter flights indicated 2 gray wolves in this pack. Since a black wolf was not observed, black wolf B192 had likely either dispersed or was killed and her radiocollar destroyed. Biologists were unable to document reproduction despite repeated efforts. The Soldier Mountain pack was

implicated in 3 probable sheep depredations. This sixth-year pack had a minimum of 2 gray wolves and was not counted as a breeding pair for 2007.

## **Other Documented Wolf Groups**

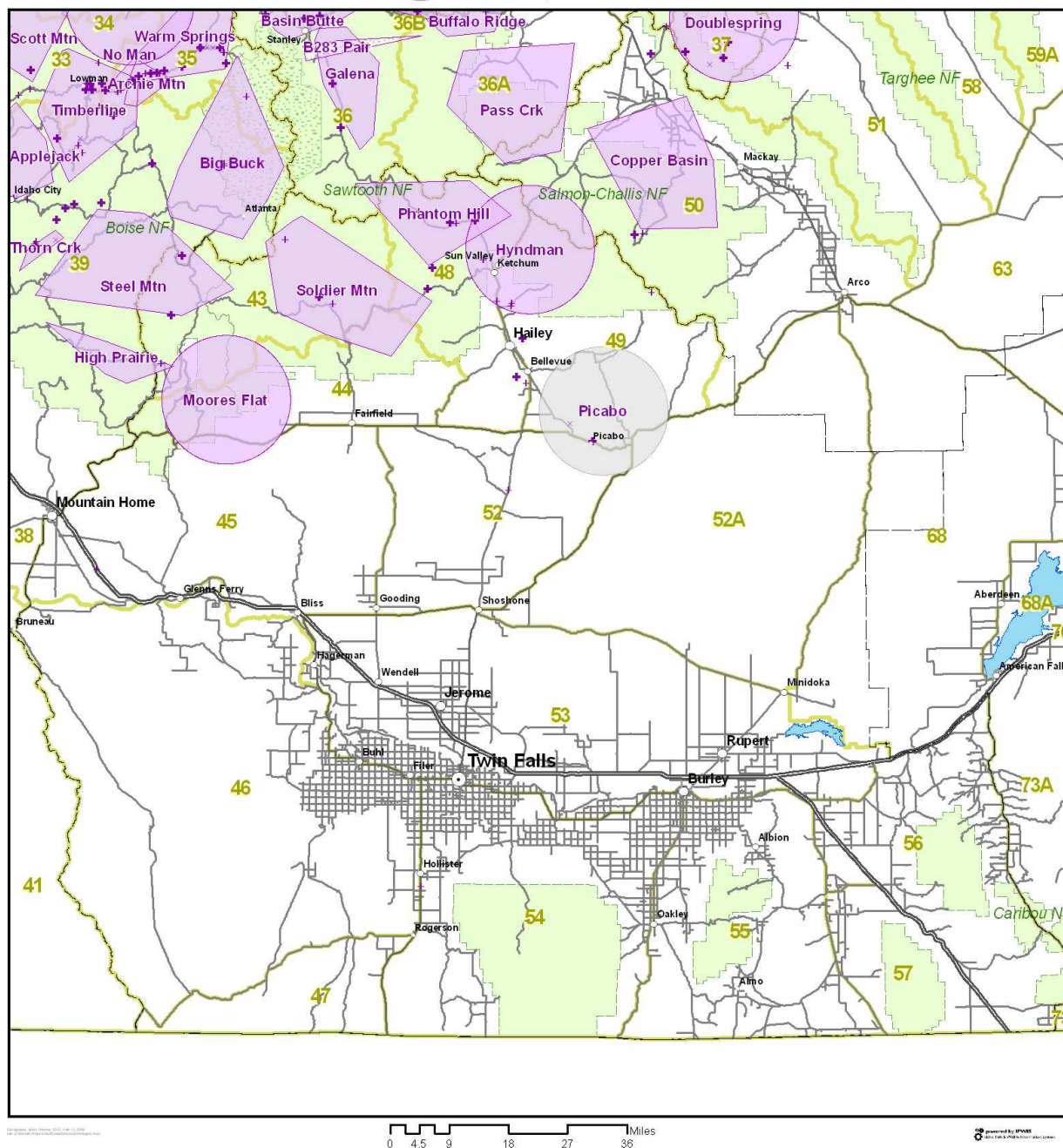
### **Picabo**

This previously undocumented group was discovered when they depredated upon cattle ( $n = 5$  confirmed) in the Picabo, Idaho, area. All 3 known wolves were removed (one shot legally under the 10(j) Rule and two removed by WS) from the area including Buffalo Ridge disperser B270. B270 had been missing since late December 2006. He was not found again until his death in 2007.

## 2007 Magic Valley Region Wolf Activity

2006-07 Telemetry and Research-based Locations \* 2007 Estimated Locations (Not Telemetry-based)\*\* 2007 Public Observations \*\*\*

Documented Pack  
 Documented Group (Less than 4 animals)  
 Documented Lone Wolf  
 Documented Pack  
 Documented Group (Pair or Group less than 4 animals)  
 Suspected Pack  
 Terminated Group  
 Multiple Wolves Observed  
 Single Wolf Sighted  
 Not Specified



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radiocollared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 10. Wolf pack activity and observations in the Magic Valley Region, 2007.

*Table 6. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game Magic Valley Region, 2007.*

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as							Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>			
			reprod. pack	breeding pair <sup>d</sup>	Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>							
DOCUMENTED PACK															
Hyndman	?	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Moore's Flat	2	6(5)	YES	NO	0	9	0	0	0	0	1	0	4(4)	27	1
Phantom Hill	5	3	YES	YES	0	0	0	0	0	2	2	0	0	14(3)	2
Soldier Mountain	2	?	NO	NO	0	0	0	0	0	1	0	1	0	(3)	0
SUBTOTAL	9	9(5)			0	9	0	0	0	3	3	1	4(4)	41(6)	3
OTHER DOCUMENTED GROUP															
Picabo <sup>j</sup>	0	0			0	3	0	0	0	0	0	0	5	0	0
SUBTOTAL	0	0			0	3	0	0	0	0	0	0	5	0	0
UNKNOWN															
	?				0	0	0	0	0	0	0	0	0	(1)	0
SUBTOTAL	0				0	0	0	0	0	0	0	0	0	(1)	0
REGIONAL TOTAL	9	9(5)			0	12	0	0	0	3	3	1	9(4)	41(7)	3

<sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.

<sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.

<sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as "an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...".

<sup>e</sup> Includes agency lethal control and legal take.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Does not include pups that disappeared before winter.

<sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>i</sup> Radiocollared wolves that became missing in 2007.

<sup>j</sup> Group no longer considered extant due to agency lethal removal, lack of verified evidence for the preceding 2 years, or other cause.

## Southeast Region

There were no established packs documented in the Southeast Region during 2007 (Figure 11). Observations of lone wolves have been reported over several years and a wolf was killed along the Utah border near Weston in 2003.

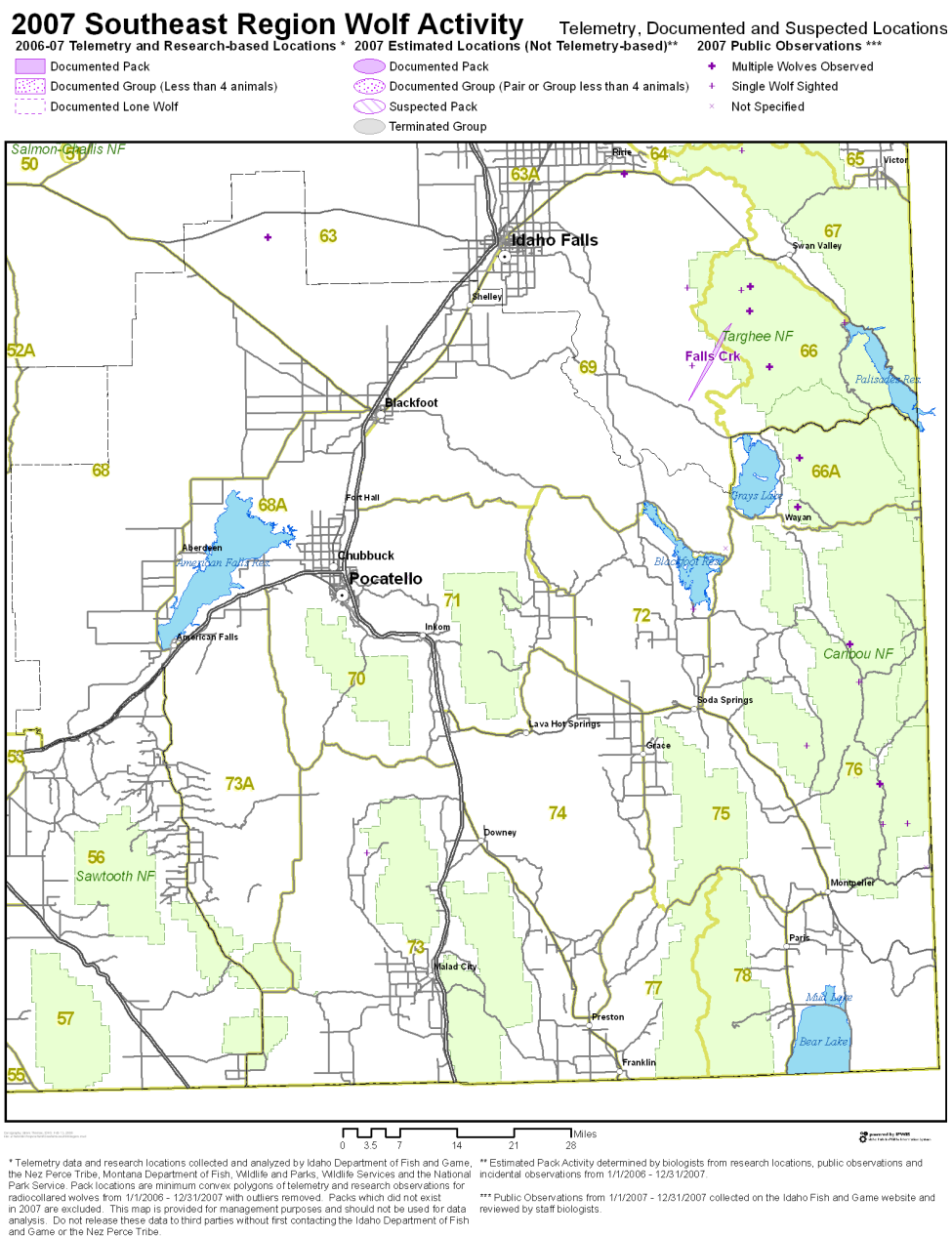


Figure 11. Wolf pack activity and observations in the Southeast Region, 2007.

## **Upper Snake Region**

The Upper Snake Region was occupied by 3 documented resident packs, 1 documented border pack, and 1 suspected resident pack during 2007 (Figure 12; Table 7). While both the Biscuit Basin and Falls Creek packs reproduced, only the Biscuit Basin pack qualified as a breeding pair. The primary source of mortality was lethal control ( $n = 8$ ), followed by other human ( $n = 1$ ) and unknown ( $n = 1$ ) causes. Confirmed and probable cattle and sheep losses were attributed to the Copper Basin and Falls Creek packs. One dog was confirmed killed by the Falls Creek pack. The Biscuit Basin pack was implicated in the wounding of 1 guard dog and the disappearance of another, but these could not be confirmed. There were also several other confirmed/probable depredations on cattle attributed to unknown groups of wolves. Two wolves were captured, resulting in the deployment of 1 radiocollar and 1 GPS collar.

### **Law Enforcement Summary**

Conservation Officers investigated or assisted in investigating 2 wolf-related incidents. One wolf carcass was collected east of Ashton, Idaho, and determined to have been struck by a vehicle. A wolf radiocollar located on mortality during a monitoring flight was retrieved in March, but because the carcass was nearly entirely scavenged, cause of death was not determined.

## **Documented Resident Packs**

### **Biscuit Basin**

Consisting of 6 wolves in early winter 2006/2007, the radiocollared breeding female 340F was intermittently located from the air during spring and early summer. However, ground telemetry failed to locate the collared animal during the denning period, and several searches of the 2006 den location indicated the pack was no longer using the area. In July, a livestock producer reported 1 sheep guarding dog was injured and another was missing (later listed as probably wolf-killed); WS confirmed wolf involvement, and during the investigation detected the radiocollared wolf in the vicinity. Additional attempts were made to determine the reproductive status during July, and while multiple adults were observed on 1 occasion, no pups were seen. In August, a WS pilot located 340F and observed her with 2 pups, qualifying this pack as a breeding pair. Aerial observations in December indicated this pack consisted of a minimum of 5 wolves.

### **Copper Basin**

Lethal control resulted in the removal of all known adults by September 2006, leaving only a subadult wolf and pups. In December, adult male B253 joined this pack, presumably assuming the role as the pack's breeding male. However, that position was short-lived when B253 and a pup were lethally controlled in February after 2 calves were confirmed killed by this pack. Another pup, male B305, was found dead of unknown causes in late winter. Confirmed livestock depredations in spring, 3 confirmed and 2 probable cattle losses, initiated efforts to determine whether this pack had reproduced, as it was unknown whether or not any other breeding-aged wolves had joined with the pack. Because no pups or indication of denning was found, and given this pack's history of chronic depredations, the decision was made to remove



the pack. In May, 4 wolves were removed, leaving only a radiocollared subadult, wolf B304. Collaboration with local livestock producers resulted in the consensus opinion that a radiocollared wolf should be left in the area to monitor future wolf activity. As such, B304 was recaptured in May and fitted with a GPS radiocollar so that aerial observations might indicate if new wolves were attempting to establish themselves in the area, as well as to investigate wolf-livestock interactions. An aerial observation during winter counts found 3 wolves in this group, resulting in the Copper Basin pack being maintained on the regional pack list.

### **Falls Creek**

Newly documented in 2007, this pack's presence was suspected, but remained unconfirmed until a dog that had been tied up near a camp trailer was killed by wolves. Wildlife Services initiated a trapping effort, which resulted in the capture of an apparently reproductive female. While processing the wolf, a single pup was observed. In August, the suspected breeding male was opportunistically killed by a WS' agent at a depredation site where 2 sheep were confirmed killed. After the initial observation of the single pup, sporadic ground and aerial observations turned up only adult wolves. A December telemetry flight again indicated only 2 adult wolves, thus precluding this pack from qualifying as a breeding pair.

## **Documented Border Packs**

### **Bechler (WY)**

This documented border pack was tallied for Wyoming for 2007. See the respective State's annual report for information on this pack.

## **Suspected Resident Packs**

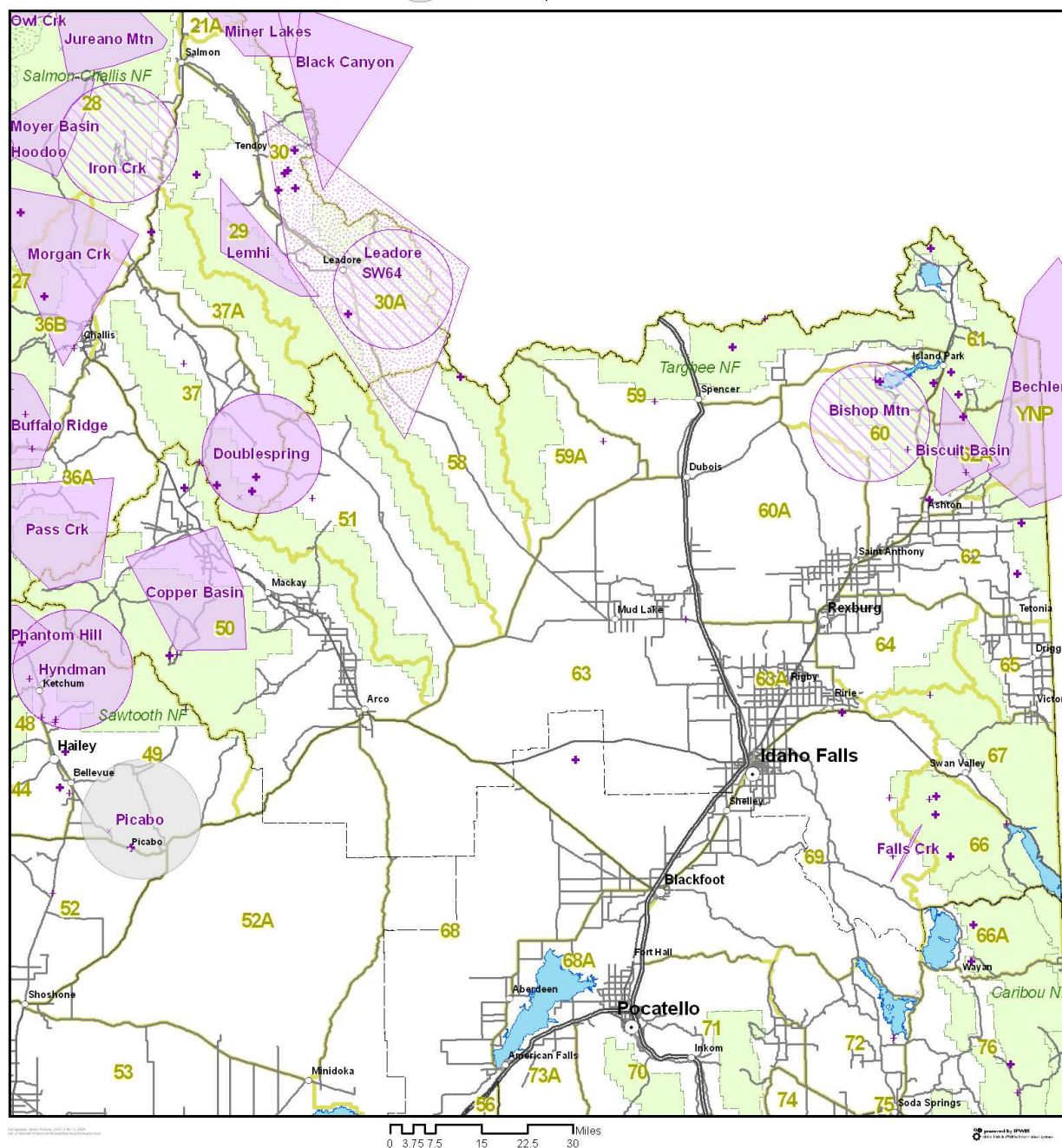
### **Bishop Mountain**

Bishop Mountain was a suspected pack that appeared to be derived from the Nez Perce pack of Yellowstone National Park. The only radiocollared wolf in this group was last located in September 2005. There were no radiocollared wolves in this group during 2007, and therefore reproduction was not verified. Sightings of multiple wolves have been reported in the range thought to be occupied by this pack, indicating their continued presence.

## 2007 Upper Snake Region Wolf Activity

2006-07 Telemetry and Research-based Locations \* 2007 Estimated Locations (Not Telemetry-based)\*\* 2007 Public Observations \*\*\*

Documented Pack  
 Documented Group (Less than 4 animals)  
 Documented Lone Wolf  
 Documented Pack  
 Documented Group (Pair or Group less than 4 animals)  
 Suspected Pack  
 Terminated Group  
 Multiple Wolves Observed  
 Single Wolf Sighted  
 Not Specified



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radiocollared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 12. Wolf pack activity and observations in the Upper Snake Region, 2007.

*Table 7. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game Upper Snake Region, 2007.*

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as							Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
DOCUMENTED PACK															
Bechler (WY) <sup>j</sup>															
Biscuit Basin	5	2	YES	YES	0	0	0	0	0	1	0	0	0	0	(1)
Copper Basin	3	0	NO	NO	0	6	0	1	0	1	1	0	5(2)	0	0
Falls Creek	2	1	YES	NO	0	1	0	0	0	1	1	0	0	2	1
SUBTOTAL	10	3			0	7	0	1	0	3	2	0	5(2)	2	1(1)
SUSPECTED PACK															
Bishop Mountain	?				0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0			0	0	0	0	0	0	0	0	0	0	0
UNKNOWN															
	?				0	1	1	0	0	0	0	0	9(3)	0	0
SUBTOTAL	0	0			0	1	1	0	0	0	0	0	9(3)	0	0
REGIONAL TOTAL	10	3			0	8	1	1	0	3	2	0	14(5)	2	1(1)

<sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.

<sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.

<sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

<sup>e</sup> Includes agency lethal control and legal take.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Does not include pups that disappeared before winter.

<sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>i</sup> Radiocollared wolves that became missing in 2007.

<sup>j</sup> Border pack officially tallied to (STATE); territory known/likely shared with Idaho. Data on these packs can be found in Rocky Mountain Wolf Recovery 2007 Annual Report. Data for mortalities and/or depredations by non-Idaho border packs that occurred within Idaho are presented here.

## **Salmon Region**

The Salmon Region was occupied by 14 documented resident, 6 documented border (one tallied to Idaho and five to Montana), and 2 suspected packs during 2007 (Figure 13; Table 8). Of the 11 packs confirmed to have reproduced, 8 qualified as breeding pairs. Lethal control ( $n = 12$ ) and other human-related ( $n = 6$ ) causes were the only documented sources of mortality. Five resident packs were responsible for 11 confirmed and 4 probable cattle losses. An additional 10 cattle were categorized as confirmed ( $n = 7$ ) and probable ( $n = 3$ ) wolf-kills by suspected packs or unknown wolves. The Lemhi and Galena packs were confirmed to have killed nine and two sheep, respectively. Eleven wolves were captured, resulting in the deployment of 6 VHF and 4 GPS radiocollars.

## **Law Enforcement Summary**

Conservation Officers, in consultation with USFWS Special Agents, investigated or responded to 12 reports involving wolves. Three wolves investigated were determined to be legally shot under provisions of the 10(j) Rule. A fourth wolf was legally shot in self defense after approaching a hunter to within 10 feet. Four wolves were determined to be illegally killed. One wolf was investigated and determined to have been struck by a vehicle. Officers also investigated 3 additional reports of dead wolves, but no carcasses were found.

## **Documented Resident Packs**

### **Aparejo**

Aerial locations in spring 2007 indicated this pack denned near where 2 wolves were captured and radiocollared in 2006. However, due to the remoteness of the location, the suspected den area was not surveyed to confirm reproduction. As such, this pack was not counted as a breeding pair. Winter aerial counts indicated a minimum of 13 wolves in this pack.

### **Basin Butte**

The Basin Butte pack once again denned in the foothills northeast of Stanley, Idaho, raising a litter of 5 pups. Despite numerous cattle in the area, this pack was not implicated in any livestock depredations, which may be due to extensive monitoring and hazing by volunteers over the course of the spring and summer. One wolf was illegally killed (female B313) in June, resulting in an individual being ticketed for the offense. Aerial observations in winter indicated at least 13 wolves in this pack, which qualified as a breeding pair.

### **Buffalo Ridge**

Consisting of at least 6 wolves in early 2007, this pack was decreased by one with the disappearance of radiocollared wolf B270 sometime in early winter. Wolf B270's whereabouts was later discovered after multiple depredations by unknown wolves near Picabo, Idaho, resulted in the lethal removal of B270 and 2 others in March. The Buffalo Ridge pack denned in the vicinity of their 2006 den location. Concurrent with a capture effort, 7 pups were observed. Trapping resulted in the capture and radiocollaring of a black yearling male, bringing to two the number of wolves being monitored in the pack. The Buffalo Ridge wolves were implicated in 1 probable and 1 confirmed depredation in spring; another 2 calves were confirmed killed in 2

incidents by the pack in December. As a result, 2 wolves were lethally removed. Aerial counts indicated a minimum of 6 wolves by the end of 2007, and this pack was counted as a breeding pair.

### **Castle Peak**

The status of this pack has been unknown since the disappearance of B195, the only radiocollared wolf in the pack, in March 2004. After the disappearance of this pack, another pack (*see* Pass Creek) has since been radiocollared and located within the East Fork Salmon River drainage, an area that was traversed by the Castle Peak pack. The possibility remains that the 2 packs are one and the same. However, it seems unlikely that the question will ever be resolved, and given the unlikely probability of 2 packs residing so closely together, the Castle Peak pack is being dropped from the regional list and replaced by the Pass Creek pack.

### **Doublespring**

Numerous sightings of wolves and wolf sign in the upper Pahsimeroi River Valley in fall resulted in the addition of this newly verified pack to the Salmon Region. In October, reputable observers reported seeing 8 wolves, one of which was a pup. Future attempts to place a radiocollar in this pack will facilitate determining if these wolves reside primarily in the Salmon Region, or if they also cross the boundary into the Upper Snake Region. As only 1 pup was counted, this pack was not counted as a breeding pair.

### **Galena**

This pack's status was unknown for much of 2007, as the sole radiocollared wolf was located only once in May before going missing entirely. However, 8 pups were observed opportunistically at a traditional rendezvous site. Trapping was initiated after depredations of cattle and sheep (1 probable cattle, 2 confirmed sheep) indicated their presence at another known rendezvous site, and 2 male pups were captured and fitted with radiocollars (1 radiocollared wolf subsequently went missing shortly after it was instrumented). One wolf was later lethally removed as a result of the livestock depredations. This pack consisted of a minimum of 12 wolves by the end of 2007, and was counted as a breeding pair.

### **Hoodoo**

Similar to 2006, aerial locations indicated the Hoodoo pack denned in their traditional location along the Middle Fork Salmon River, but the site's remoteness made it infeasible to survey for reproduction. With only 1 radiocollared wolf being monitored in the pack, several attempts were made during summer to locate the pack with the intent of trapping and radiocollaring, with limited success; while reproduction was verified during one of these efforts (a minimum of 3 pups counted), the wolves moved off before traps could be set. A minimum of 13 wolves was counted in the pack during winter counts, and was listed as a breeding pair.

### **Jureano Mountain**

The disappearance of wolf B223 in spring left this pack without a radiocollared member, prompting efforts to locate this pack for trapping and radiocollaring. Searches for wolf presence at traditional den and rendezvous site locations in early summer eventually resulted in the successful location of the pack, and trapping was immediately initiated. Unfortunately, 2 pups

were inadvertently trapped, causing the pack to move from the area. However, a subadult male was trapped near the abandoned rendezvous site and fitted with a GPS radiocollar to provide data for a research project investigating alternative wolf population monitoring techniques. In August, the Jureano Mountain pack was involved in 4 WS' investigations of depredations that resulted in the confirmation of 5 dead cattle. Three wolves were lethally controlled in response. Other mortality included an adult female wolf killed illegally in January. Although 2 pups were verified, temporarily fulfilling the breeding pair requirement, a pup was lethally removed during control efforts. This could conceivably have reduced the number of pups in the pack to one, and without verification there were additional pups beyond the two initially observed, this pack was not counted as a breeding pair. The radiocollared wolf could not be located during winter aerial counts, and thus a pack size was not determined.

### **Landmark**

The Landmark pack has not been monitored via radiocollared wolves since 2003. However, due to the fidelity this pack exhibits for den/rendezvous site locations, their continued presence has been confirmed in the past via ground surveys at these locations. A survey in September of a previously used rendezvous site revealed ample evidence that the Landmark pack reproduced. However, since no pups were observed, it was not possible to determine whether or not there were at least 2 pups produced to fulfill the breeding pair requirement; as such, this pack was considered as reproductive, but not a breeding pair.



An adult wolf from an unknown pack poses for a picture in a frosty meadow near Cape Horn.

*Jason Husseman*



### **Lemhi**

In their second year as a documented pack, the Lemhi pack was reduced to 2 individuals due to mortality attributed to lethal control, legal and illegal take. In January, a pup was illegally killed after being caught inadvertently in a bobcat trap. In May, another wolf was legally shot among a landowner's sheep; the livestock owner had lost 6 sheep to wolves the previous day. After another confirmed sheep depredation (1 loss), WS lethally removed a black female from this pack. A third depredation in June resulted in 2 more confirmed sheep kills. This pack did not appear to reproduce, and was not a breeding pair in 2007.

### **Morgan Creek**

The Morgan Creek pack was without radiocollared individuals and its status was unknown for most of 2007. In February, 2 calves were investigated by WS and listed as probable wolf kills, presumably by the Morgan Creek pack. After another confirmed calf kill in April, WS attempted to trap and radiocollar a wolf; 1 wolf was temporarily caught, but managed to pull out of the trap before it could be anesthetized. Reports of wolf activity in the Morgan Creek drainage in July initiated efforts to locate, capture, and radiocollar members of this pack. In July, 2 wolves were captured and fitted with GPS (*see* Research section) and VHF radiocollars. On the morning of the first capture, several adults and a minimum of 2 pups were heard howling nearby, substantiating reports by a range rider that the pack had reproduced and had a rendezvous site in an adjacent tributary. Due to livestock conflicts, the radiocollared animals were short-lived; female wolf B334 was legally shot by the range rider 2 weeks later when seen harassing cattle. The second radiocollared wolf was killed by WS along with another uncollared wolf in August after this pack's second confirmed cattle depredation of the year. Although no year-end aerial counts could be obtained, this pack was estimated to contain at least 5 individuals and was verified as a breeding pair for 2007.

### **Moyer Basin**

This longstanding pack in the Salmon Region was targeted for helicopter capture concurrent to winter elk surveys, and in January, an adult male was successfully darted and fitted with a radiocollar. In spring, the pack denned near their 2006 den site, raising a litter of 5 pups. In June, a subadult female was captured and fitted with a GPS radiocollar. Unfortunately, the radiocollar failed shortly after deployment, necessitating the capture of another wolf. In a second effort, a pup too small for radiocollaring was captured, causing the pack to abandon their rendezvous site. Several weeks later, another attempt was made at the pack's new rendezvous site, resulting in the capture of the same pup previously caught. However, the pup had grown sufficiently large enough to justify placing a GPS radiocollar on the animal. The Moyer Basin pack was responsible for wounding a domestic calf in September, which later died from its wounds. This pack consisted of a minimum of 10 wolves by the end of 2007 and was a documented breeding pair.



Pups from the Moyer Basin pack playing on a warm summer afternoon.  
*Jason Husseman*

### **Owl Creek**

The uncollared Owl Creek pack was slated to be removed from the regional list due to the lack of any verified wolf activity since their discovery in 2005. Due to reports from the public, however, tracks of multiple wolves were confirmed by IDFG personnel in the area believed to be occupied by this pack. While the Owl Creek pack's status as a breeding pair remained unknown, they continued to count as a verified pack for the region.

### **Pass Creek**

In January, the suspected breeding female from this pack was darted from a helicopter concurrent to ungulate capture operations for an IDFG elk research project (see Research section). Aerial telemetry indicated this pack denned in a tributary of the East Fork Salmon River, and reproduction was verified when 3 pups were observed from the air during an August monitoring flight. Aerial telemetry collected over the course of the year indicated this pack ranged over an area used in years previous by the Castle Peak pack, prompting them to be dropped from the regional list (*see* Castle Peak). One wolf was found in January that had been illegally killed within the Pass Creek pack's territory, presumably as a member of this pack. By year's end, a minimum of 8 wolves resided in this pack, which also qualified as a breeding pair.





An uncommon color phase, white female wolf B317 of the Pass Creek pack recuperates from anesthesia after being captured and fitted with a radiocollar.

*Jason Husseman*

### **Twin Peaks**

Due to lack of verified wolf activity for 2 consecutive years, the Twin Peaks pack was dropped from the regional pack list.

### **Yankee Fork**

The Yankee Fork pack was located intermittently in winter 2006/2007, but the radiocollared wolf, male B240, was missing for most of the summer and fall. Although several attempts were made over the course of the field season to locate and determine the reproductive status of this pack, all efforts were unsuccessful. Without an aerial location for over 6 months, it seemed likely the radiocollared animal was either gone or its radiocollar had malfunctioned. Therefore, it came as somewhat of a surprise when B240's radio signal was detected loud and clear during a December monitoring flight, allowing IDFG personnel to observe 11 wolves in the pack. Because of their unknown reproductive status, the Yankee Fork pack was not considered a breeding pair.

## **Documented Border Packs**

### **Battlefield (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

**Black Canyon (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

**Hughes Creek (ID)**

Howling surveys conducted in July near this pack's previously known den/rendezvous site indicated the presence of a minimum of 2 pups. Another attempt to obtain a better pup count was unsuccessful, although visual confirmation of at least 2 pups was made. During fall, a hunter killed a wolf in self defense after it approached within 15 feet of him. Aerial counts indicated a minimum of 11 wolves in the pack, which also qualified as a breeding pair.

**Miner Lakes (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

**Painted Rocks (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

**Sula (MT)**

This documented border pack was tallied for Montana for 2007. See the respective State's annual report for information on this pack.

**Suspected Resident Packs****Iron Creek**

Numerous observations of wolves and confirmed wolf depredations over the past 2 years indicated the likely presence of a pack of wolves southwest of Salmon, Idaho. There were 3 confirmed and 1 probable cattle losses in this locale in 2007. With no confirmed activity from adjacent radiocollared packs near where these depredations or sightings have occurred, it appeared likely a pack has taken up residence in what was previously unoccupied territory along the west side of the Salmon River.

**Leadore**

Sporadic sightings of wolves and wolf sign continued to be reported from this location. However, reported wolf activity was reduced from 2006, when the suspected breeding pair of this unknown pack of wolves was killed near a ranch southeast of Leadore, Idaho. Three cattle were confirmed killed in September in the area thought to be inhabited by this suspected pack.

**Other Documented Wolf Groups****B07**

Thought to be one of the last surviving wolves of the original 35 that were released into Idaho in 1995 and 1996, B07 was found dead in January in a gulch next to the highway north of Salmon, Idaho. A necropsy of the carcass indicated the wolf was likely struck by a car. Because of the

fact the wolf's teeth were so extensively worn, it's likely this animal was no longer able to capture prey and was subsisting on road-killed animals, thus potentially predisposing it to being hit by a vehicle. Wolf B07 and his mate B11 were the founding pair of the Big Hole pack, first in the Big Hole of Montana, and then along the Idaho-Montana divide after he and B11 were relocated due to livestock conflicts. The radiocollar B07 was wearing failed some time in 2003 while still a member of the Big Hole pack, and his status was unknown (though it was likely he was observed there in 2005) until his carcass was eventually discovered by bird hunters. It was presumed that he was displaced as the breeding male of the pack by a younger wolf, and was roaming the mountains of Idaho and Montana as a lone wolf until his death.

**B283**

Female wolf B283 dispersed from the Warm Springs pack in fall, and was observed from the air with another uncollared wolf on several occasions in the vicinity of Stanley, Idaho. By winter, this pair appeared to be attempting to establish a territory within the Sawtooth National Recreation Area along the White Cloud Peaks range. Additional aerial locations will facilitate determining whether this pair is successful in locating unoccupied range within an area that already supports several packs.

**B290**

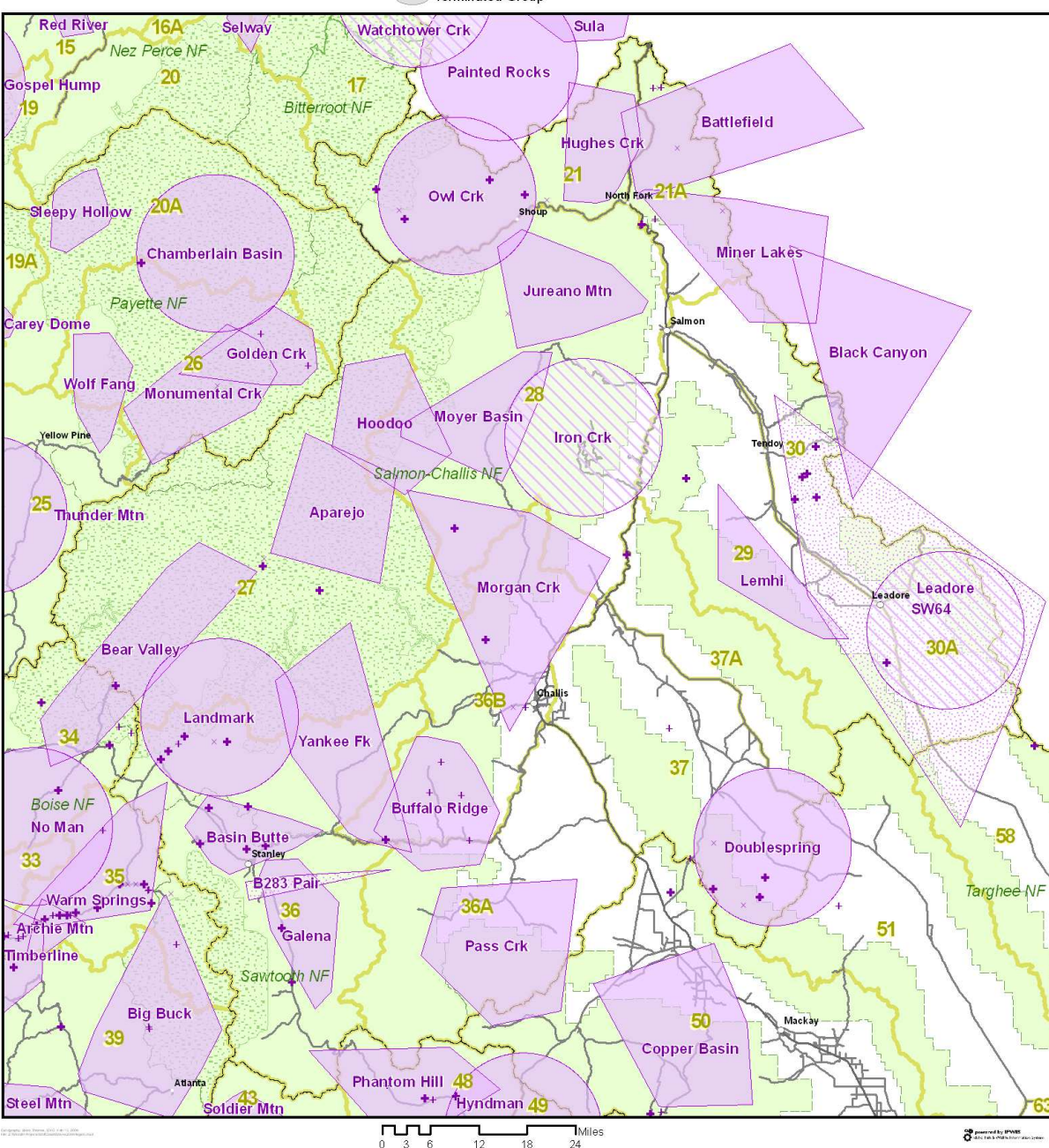
After being captured in summer 2006 as a member of the Morgan Creek pack, female B290 most likely dispersed some time in late fall or early winter 2006/2007. She was located in February near the Hughes Creek pack, well north of her natal pack's territory. B290's signal was not detected thereafter, and she is considered missing.

**SW-64**

A dispersing wolf from the Sage Creek pack of Montana, telemetry locations in 2007 indicated SW-64 was spending time in both Idaho and Montana in the upper Lemhi River drainage. Thought to be a lone wolf after the female he was traveling with was killed in November 2006, SW-64 was observed from the air in October with another wolf.

## 2007 Salmon Region Wolf Activity

2006-07 Telemetry and Research-based Locations \* 2007 Estimated Locations (Not Telemetry-based)\*\* 2007 Public Observations \*\*\*



\* Telemetry data and research locations collected and analyzed by Idaho Department of Fish and Game, the Nez Perce Tribe, Montana Department of Fish, Wildlife and Parks, Wildlife Services and the National Park Service. Pack locations are minimum convex polygons of telemetry and research observations for radiocollared wolves from 1/1/2006 - 12/31/2007 with outliers removed. Packs which did not exist in 2007 are excluded. This map is provided for management purposes and should not be used for data analysis. Do not release these data to third parties without first contacting the Idaho Department of Fish and Game or the Nez Perce Tribe.

\*\* Estimated Pack Activity determined by biologists from research locations, public observations and incidental observations from 1/1/2006 - 12/31/2007.

\*\*\* Public Observations from 1/1/2007 - 12/31/2007 collected on the Idaho Fish and Game website and reviewed by staff biologists.

Figure 13. Wolf pack activity and observations in the Salmon Region, 2007.



*Table 8. Minimum number of wolves detected, reproductive status, mortality, dispersal, monitoring status, and livestock depredation for documented and suspected wolf packs and other wolf groups within Idaho Department of Fish and Game Salmon Region, 2007.*

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as		Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>		Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
DOCUMENTED PACK															
Aparejo	13	?	NO	NO	0	0	0	0	0	1	0	0	0	0	0
Basin Butte	13	5	YES	YES	0	0	1	0	0	2	0	0	0	0	0
Battlefield (MT) <sup>j</sup>															
Black Canyon (MT) <sup>j</sup>															
Buffalo Ridge	6	7	YES	YES	0	2	0	0	1	2	1	0	3(1)	0	0
Castle Peak <sup>k</sup>															
Doublespring	8	1	YES	NO	0	0	0	0	0	0	0	0	0	0	0
Galena	12	8	YES	YES	0	1	0	0	0	1	2	2	(1)	2	0
Hoodoo	13	3	YES	YES	0	0	0	0	0	1	0	0	0	0	0
Hughes Creek (ID) <sup>j</sup>	11	2	YES	YES	0	0	1	0	0	1	0	0	0	0	0
Jureano Mountain	?	2(1)	YES	NO	0	3	1	0	0	1	1	1	5	0	0
Landmark	?	1	YES	NO	0	0	0	0	0	0	0	0	0	0	0
Lemhi	2	?	NO	NO	0	2	1	0	0	1	0	0	0	9	0
Miner Lakes (MT) <sup>j</sup>															
Morgan Creek	5	2	YES	YES	0	3	0	0	0	0	2	0	2(2)	0	0
Moyer Basin	10	5	YES	YES	0	0	0	0	0	3	4	1	1	0	0
Owl Creek	?	?	NO	NO	0	0	0	0	0	0	0	0	0	0	0
Painted Rocks (MT) <sup>j</sup>															
Pass Creek	8	3	YES	YES	0	0	1	0	0	2	1	0	0	0	0
Sula (MT) <sup>j</sup>															
Twin Peaks <sup>k</sup>															
Yankee Fork	11	?	NO	NO	0	0	0	0	0	1	0	0	0	0	0
SUBTOTAL	112	39(1)			0	11	5	0	1	16	11	4	11(4)	11	0
SUSPECTED PACK															
Iron Creek	?				0	0	0	0	0	0	0	0	3(1)	0	0
Leadore	?				0	0	0	0	0	0	0	0	3	0	0
SUBTOTAL	0				0	0	0	0	0	0	0	0	6(1)	0	0
OTHER DOCUMENTED GROUP															
B7	0				0	0	1	0	0	0	0	0	0	0	0
B283	2				0	0	0	0	0	0	0	0	0	0	0
B290	?				0	0	0	0	0	0	0	1	0	0	0
SW-64	2				0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	4	0			0	0	1	0	0	0	0	1	0	0	0
UNKNOWN															

Wolf group <sup>a</sup>	Min. no. wolves detected <sup>b</sup>	Reproductive status			Documented mortalities				Known dispersal	Monitoring status			Confirmed & (probable) wolf-caused livestock losses		
		Min. no. pups prod. (died) <sup>c</sup>	Reported as		Natural	Control <sup>e</sup>	Other human <sup>f</sup>	Unknwn <sup>g</sup>		Active radio collars	No. wolf captures <sup>h</sup>	No. wolves missing <sup>i</sup>	Cattle	Sheep	Dogs
			reprod. pack	breeding pair <sup>d</sup>											
	?				0	1	0	0	0	0	0	0	1(2)	0	0
SUBTOTAL	0	0			0	1	0	0	0	0	0	0	1(2)	0	0
REGIONAL TOTAL	116	39(1)			0	12	6	0	1	16	11	5	18(7)	11	0

<sup>a</sup> Documented pack = territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex). Suspected pack = geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status. Other documented group = verified groups not meeting either documented or suspected pack status (e.g., lone wolves, potential mated pairs, etc.). Unknown = geographic areas where wolf presence was previously unverified and/or no data on group status was known.

<sup>b</sup> Summing this column does not equate to number of wolves estimated to be present in the population.

<sup>c</sup> Number in parentheses indicates known pup mortality; pup mortalities tallied in the appropriate column in DOCUMENTED MORTALITIES.

<sup>d</sup> Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an adult male and a female wolf that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

<sup>e</sup> Includes agency lethal control and legal take.

<sup>f</sup> Includes all other human-related deaths.

<sup>g</sup> Does not include pups that disappeared before winter.

<sup>h</sup> Includes wolves captured for monitoring purposes during 2007. Most, but not all, were radiocollared.

<sup>i</sup> Radiocollared wolves that became missing in 2007.

<sup>j</sup> Border pack officially tallied to (STATE); territory known/likely shared with Idaho. Data on these packs can be found in Rocky Mountain Wolf Recovery 2007 Annual Report. Data for mortalities and/or depredations by non-Idaho border packs that occurred within Idaho are presented here.

<sup>k</sup> Group no longer considered extant due to agency lethal removal, lack of verified evidence for the preceding 2 years, or other cause.

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## APPENDIX A

### : POPULATION ESTIMATION TECHNIQUE USED TO DETERMINE WOLF POPULATION NUMBERS IN IDAHO

From 1996 until 2005, wolf populations were counted using a total count technique that was quite accurate when wolf numbers were low and most had radiocollars. We have, for the past two years, used an estimation technique that is more applicable to a fully recovered population and types of data we are able to collect. In 2006 we began using an estimation technique that had been peer reviewed by University and NRM wolf managers. This technique bypasses the need to count pups in every pack, and instead relies on our documented packs, estimated pack size, number of wolves documented in small groups not considered packs, and a percentage of the population believed to be lone wolves. Mathematically this technique is represented as:

$$\text{Minimum Wolf Population Estimate} = ((\text{Documented packs} * \text{mean pack size}) + (\text{Wolves in other documented wolf groups})) * (\text{lone wolf factor})$$

Using this technique, the 2007 wolf population estimate is 732 wolves and represents an increase of 9% over 2006's estimated wolf population:

$$\begin{aligned} &((83 * 7.7) + (12)) * 1.125 \\ &(639 + 12) * 1.125 \\ &651 * 1.125 = \\ &732 \end{aligned}$$

The number of documented packs that were extant at the end of 2007 was 83.

Mean pack size (7.7) was calculated using only those packs ( $n = 34$ ) for which biologists believed complete pack counts were obtained in 2007.

To account for wolves not classified as lone wolves and not associated with documented packs, we included a "total count" for those radiocollared wolves in groups of 2-3 wolves that were not considered packs under Idaho's definition. This resulted in the addition of 12 wolves from 8 groups.

A lone wolf factor (12.5%) was added to account for that component of the wolf population comprised of wolves not associated with packs or groups of 2-3 wolves. This was a mid value derived from 5 peer-reviewed, published studies and 4 non-reviewed papers from studies that occurred in North America and were summarized and reported in 2003 (Mech and Boitani 2003, page 170). For 2007, an estimated 81 lone wolves were in the Idaho population.

It is important to recognize this estimate is not corrected for survey effort and represents only the minimum number of wolves estimated to be present in Idaho. The actual number of wolves in Idaho is likely more than the 'estimated minimum number', as we did not include suspected



packs (packs for which we did not have verified evidence) in the estimator. Also, changes in the estimate from year to year are not adjusted to differing amounts of effort put forth to document wolf activity. However, we are comfortable that this estimate is a good representation of packs that have been reported by the public and agency professionals and verified by wolf specialists, and thus a defensible estimate of the minimum population.

## APPENDIX B.

### ESTIMATING BREEDING PAIRS BY USING PACK SIZE

The USFWS established a population recovery goal for wolves in the northern Rocky Mountains to maintain 30 “breeding pairs” of wolves for 3 consecutive years well distributed across the 3 states of Idaho, Wyoming, and Montana. A breeding pair is strictly defined by the USFWS as 2 adult wolves that have produced at least 2 pups that survived through December 31 of their birth year. Breeding pair status is determined at the end of each year and essentially represents a successful reproductive wolf pack. Not all wolf packs reproduce successfully each year or have pups that survive until the end of the year, so not all packs qualify as breeding pairs. Also, not all packs can be observed by project personnel to verify reproductive status. The reason for using this technique for the recovery goal is to provide a measure and estimator of the reproductive success and recruitment of wolves into the population the following year.

As part of the forthcoming Delisting Rule, the USFWS has established a post-delisting monitoring plan that is also based on monitoring breeding pairs. The post-delisting monitoring plan requires the 3 Northern Rocky Mountain (NRM) states to maintain a federally required minimum of  $\geq 30$  breeding pairs and  $\geq 300$  wolves well distributed among the 3 states, including  $\geq 10$  breeding pairs and  $\geq 100$  wolves within each state. During the first 5 years after delisting, federal law will require the 3 states to continue to monitor and report breeding pair status of wolves to insure wolf population levels do not fall below the federally required minimums.

The breeding pair definition places a significant burden on managers because it requires intensive monitoring and a high degree of certainty in assigning breeding pair status. For the past 10 years, during wolf recovery efforts within the NRM states, breeding pair status was determined using intensive and expensive monitoring methods relying on the use of radiotelemetry techniques. Wolves were captured, radiocollared, and tracked through the year from the air and ground. Intensive radiotracking efforts during spring and summer allowed field biologists to locate denning wolves, establish reproductive status of wolf packs, and determine litter sizes. Additional field efforts, including ground and aerial tracking and observations, were required through the fall and winter to determine pup and adult survival and breeding pair status by the end of the year.

This method of determining breeding pair status has become increasingly difficult through time as wolf populations grow and funding and personnel levels remain the same. Federal funding following delisting is in question, adding to this growing concern. In response to these concerns, NRM wolf managers, working through the University of Montana Cooperative Wildlife Research Unit, have developed a new and more efficient method for determining and monitoring breeding pair status of wolf populations. This new method will be used by all 3 NRM states and was evaluated, peer reviewed and approved by the USFWS to be used once wolves are delisted.

Recent development of a surrogate method for determining breeding pair status based on pack size may reduce the level of monitoring intensity required to verify minimum breeding pair status (M. S. Mitchell, U.S. Geological Survey, 2008). In essence, a historical record now exists

that provides a correlation between pack size and the probability of that pack meeting the definition of a breeding pair. As pack size increases, the probability that the pack meets breeding pair status increases. For example, the probability that a pack consisting of 10 wolves constitutes a breeding pair is 0.95. Therefore, the model will allow managers to develop probabilistic estimates of breeding pairs on a statewide basis. Because pack size is more easily obtained than actual pup survival data, monitoring levels needed to ensure minimum breeding pair goals may be reduced.

For Idaho wolves, the correlation between pack size and breeding pair status is presented in Table 1. By definition, there must be a minimum of 4 wolves within a pack to qualify as a breeding pair. In Idaho, even small pack sizes  $\geq 4$  have fairly high probabilities of meeting the breeding pair definition as most packs in Idaho reproduce and recruit offspring into the population successfully.

Table 1. Probability by pack size of a wolf pack containing a successful breeding pair (1 adult male, 1 adult female, and  $\geq 2$  pups), Idaho, 1996-2005 (adapted from Mitchell et al. 2008).

	Pack size										
	4	5	6	7	8	9	10	11	12	13	$\geq 14$
Breeding pair probability	0.65	0.73	0.79	0.85	0.89	0.92	0.95	0.96	0.97	0.98	0.99

Application of this method is simple and straight forward. Once the number of documented packs and their pack sizes are determined for the year, each pack is assigned the probability that it will meet the definition of a breeding pair based on its pack size. Then all probabilities are summed for all packs to produce an estimate of the number of breeding pairs represented by those documented packs. This technique can be applied without any prior knowledge of breeding pair status as illustrated in Table 2. Most often, however, through regular monitoring activities and field work by wolf managers, breeding pair status for some packs may be known, while those of others may not. In this more typical case, those packs that are known to be breeding pairs are assigned a probability of 1.00, or 100%; those packs known not to be breeding pairs are assigned a probability of 0.00, or 0%; and those packs of unknown status are assigned the logistic regression model probabilities based on pack size as listed in Table 1. The procedure is then the same; all probabilities are summed for all packs to obtain an estimate of the number of breeding pairs (Table 3). The IDFG, NPT, and other NRM managers intend to use this new logistic model method post-delisting. The USFWS authorities have approved the technique.

One other advantage of this new technique is that confidence intervals can be developed to provide a measure of precision for this estimate. The logistic regression model was developed during the recovery phase when wolves were protected under the ESA. The correlation between pack size and breeding pair status should be reexamined post-delisting, as this relationship will likely change once wolves are delisted and are subject to regulated harvest.

Table 2. A hypothetical illustration of the logistic regression model of Mitchell et al. 2008 for estimating the number of breeding pairs, given unknown status of breeding pairs, for wolves in Idaho.

Pack	Pack Size	Known BP <sup>a</sup> Status	BP Probability
A	4	Unknown	0.65
B	4	Unknown	0.65
C	4	Unknown	0.65
D	6	Unknown	0.79
E	6	Unknown	0.79
F	6	Unknown	0.79
G	8	Unknown	0.89
H	8	Unknown	0.89
I	8	Unknown	0.89
J	10	Unknown	0.95
K	11	Unknown	0.96
L	11	Unknown	0.96
M	12	Unknown	0.97
N	13	Unknown	0.98
O	15	Unknown	0.99
Estimated number of breeding pairs			13

<sup>a</sup> BP = Breeding Pair(s)

Table 3. A hypothetical illustration of the logistic regression model of Mitchell et al. 2008 for estimating the number of breeding pairs, given both known and unknown status of breeding pairs, for wolves in Idaho.

Pack	Pack Size	Known BP <sup>a</sup> Status	BP Probability
A	4	Yes	1.00
B	4	No	0.00
C	4	Unknown	0.65
D	6	Yes	1.00
E	6	Yes	1.00
F	6	Unknown	0.79
G	8	Yes	1.00
H	8	Unknown	0.89
I	8	Unknown	0.89
J	10	Unknown	0.95
K	11	Yes	1.00
L	11	Yes	1.00
M	12	Unknown	0.97
N	13	Unknown	0.98
O	15	Yes	1.00
Estimated number of breeding pairs			13

<sup>a</sup> BP = Breeding Pair(s)

Technique derived from and published in:

Mitchell, M. S., D. A. Ausband, C. A. Sime, E. E. Bangs, J. A. Gude, M. D. Jimenez, C. M. Mack, T. J. Meier, M. S. Nadeau, and D. W. Smith. 2008. In press. Estimation of self-sustaining packs for wolves in the Rocky Mountains. *Journal of Wildlife Management* (used with permission)

## APPENDIX C

### : CONTACTS FOR IDAHO WOLF MANAGEMENT

**Idaho Fish and Game Regional Offices at:**

Headquarters Wildlife Bureau	(208) 334-2920
Panhandle Region	(208) 769-1414
Clearwater Region	(208) 799-5010
Southwest Region	(208) 465-8465
McCall Subregion	(208) 634-8137

Magic Valley Region	(208) 324-4350
Southeast Region	(208) 232-4703
Upper Snake Region	(208) 525-7290
Salmon Region	(208) 756-2271

For information about wolves in Idaho and IDFG management:

<http://fishandgame.idaho.gov/cms/wildlife/wolves/>

To contact IDFG via email:

<http://fishandgame.idaho.gov/inc/contact.cfm>

**The Nez Perce Tribe's Idaho Wolf Recovery Program:**

Telephone: (208) 634-1061  
Fax: (208) 634-4097  
Mail: P.O. Box 1922  
McCall, ID 83638-1922  
Email: [cmack@nezperce.org](mailto:cmack@nezperce.org)  
[jholyan@nezperce.org](mailto:jholyan@nezperce.org)

For information about the Nez Perce Tribe's Wildlife Program and to view Recovery Program Progress Reports, please visit the following website:

[http://www.nezperce.org/programs/wildlife\\_program.htm](http://www.nezperce.org/programs/wildlife_program.htm)

**U.S. Fish and Wildlife Service Northern Rocky Mountain Wolf Recovery:**

For information about wolf recovery in the Northern Rocky Mountains, please visit the USFWS website at the following: <http://www.westerngraywolf.fws.gov/>

**To report wolf sightings within Idaho:**

Report online: <http://fishandgame.idaho.gov/wildlife/wolves/report.cfm>

**To report livestock depredations within Idaho:**

USDA/APHIS/Wildlife Services

State Office, Boise, ID	(208) 378-5077
District Supervisor, Boise, ID	(208) 378-5077
District Supervisor, Gooding, ID	(208) 934-4554
District Supervisor, Pocatello, ID	(208) 236-6921
Wolf Specialist, Arco, ID	(208) 681-3127

**To report information regarding the illegal killing of a wolf or a dead wolf within Idaho:**

U.S. Fish and Wildlife Service Senior Agent, Boise, ID	(208) 378-5333
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Citizens Against Poaching (24hr) or any IDFG Office	1-800-632-5999
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# WYOMING WOLF RECOVERY 2007 ANNUAL REPORT

*A cooperative effort by the U.S. Fish and Wildlife Service,  
National Park Service, and USDA Wildlife Services*



Photo by: Sarah Dewey NPS

This cooperative report presents information on the status, distribution, and management of wolves in Wyoming, including Yellowstone National Park, from January 1, 2007 through December 31, 2007.

This report may be copied and distributed as needed.

***Suggested Citation:*** Jimenez, M.D., D.W. Smith, D.R. Stahler, D.S. Guernsey, S.P. Woodruff, and R.F. Krischke, 2008. Wyoming Wolf Recovery 2007 Annual Report. Pages 204-236 in Rocky Mountain Wolf Recovery 2007 Interagency Annual Report. C.A. Sime and E. E. Bangs, eds. U.S. Fish and Wildlife Service, Ecological Services, 585 Shepard Way, Helena, Montana 59601. 275pp



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- Figure 3. Greater Yellowstone Wolf Recovery Area. (see web for separate files)

## SUMMARY

The total gray wolf (*Canis lupus*) population in Wyoming (WY) increased approximately 15% from 311 wolves in 2006 to 359 wolves in 2007. The number of wolves in WY was derived from the entire State of WY including Yellowstone National Park (YNP); however, wolf recovery occurred primarily in the northwest section of the state. The number of wolves in YNP increased 26% from 136 wolves in 2006 to 171 in 2007. YNP had 11 packs with an average pack size of 14.2 wolves. Pack size ranged from 4 to 22. Wolf numbers in WY outside YNP increased slightly from 175 wolves in 2006 to 188 wolves in 2007. WY outside YNP had 25 packs with an average pack size of 6.9 wolves. Pack size ranged from 2 to 13.

Breeding pairs in the State of WY slightly decreased from 25 in 2006 to 24 in 2007. YNP had 10 breeding pairs in 2007. Average litter size was 5.8 pups. Eleven packs produced >64 pups surviving through 31 December; however, 1 pack was not officially counted as a breeding pair due to the loss of both breeding wolves in the pack prior to 31 December. WY outside YNP had 14 breeding pairs in 2007. Average litter size was 4.5 pups. Fifteen packs produced >68 pups that survived until 31 December; however, 1 pack was not officially counted as a breeding pair due to the loss of 1 breeding wolf in the pack prior to 31 December.

Numerous ongoing research projects investigated predator-prey interactions, wolf population dynamics, disease, genetics, interactions between wolves and other predators, and livestock depredations.

We managed wolf population growth and wolf distribution in WY outside YNP to minimize chronic loss of livestock from wolves. In 2007, we reduced confirmed wolf depredations by >55% compared to 2006 by aggressively removing chronically depredating wolves early in the grazing season. Sixty-three wolves (approximately 24% of the WY wolf population outside YNP) were lethally removed in control actions in 2007; however, we maintained the wolf population well above recovery objectives with 25 confirmed packs and 14 breeding pairs. In 2007, wolves killed >91 livestock (including 71 confirmed and 20 probable depredations) and 3 dogs (2 confirmed; 1 probable). Confirmed livestock depredations included 55 cattle (36 calves; 19 cows/yearlings) and 16 sheep (2 ewes; 14 lambs).

## **GREATER YELLOWSTONE RECOVERY AREA - WYOMING**

### **PERSONNEL**

#### **Personnel in Wyoming outside Yellowstone National Park**

Wolves in Wyoming outside Yellowstone National Park (WY) were monitored by Project Leader Mike Jimenez U.S. Fish and Wildlife Service (USFWS), Susannah Woodruff (USFWS), Jim Pehringer (USDA Wildlife Services) (WS), Dylan Taylor (USFS), Steve Cain, Sarah Dewey (Grand Teton National Park), and volunteers Karen Colclough and Hilary Eisen. In 2007, the USFWS and WS combined funding for a third year to maintain a wolf management specialist position working under the direction of the USFWS and who is stationed in Cody, Wyoming.

USFWS law enforcement agents in Wyoming were Dominic Domenici (Resident Agent-in-Charge, Casper), Tim Eicher (Special Agent, Cody), and Roy Brown (Special Agent, Lander).

Wyoming employees of WS who were involved with wolf management in 2007 included State Director Rod Krischke, District Supervisors Craig Acres and Merrill Nelson, Roberta Despain, Vivian Meek, Asst. District Supervisor Rod Merrell, Specialists Jim Pehringer, Arnold DeBock, Tracy Frye, Michael Peterson, Chuck Bunch, Jeremy Johnson, Wade Jones, Dave Fowler, Steve Richins, Shane Huseby, Brad Seaman, Dave Johnson, Phil Heagy, Beldin Grant, Dan Bragg, and Pilots Miles Hausner, Kelly Huseby, and Ted Jensen.

## Personnel in Yellowstone National Park

Five full-time employees worked for the Yellowstone Wolf Project in 2007: Project Leader Douglas Smith and Biological Science technicians Erin Albers, Debra Guernsey, Rick McIntyre and Matthew Metz. Daniel Stahler split time between graduate work at UCLA and working in the park as the project biologist. Other paid and volunteer staff were as follows: Colin Bennell, Kira Cassidy, Nick Ehlers, Julie Kray, Scott Laursen, Nicole Legere, Sarah Malick, Jerod Merkle, Abby Nelson, Audrey Squires, Trina Wade, and Libby Williamson. Some of these people were paid technicians through the Yellowstone Park Foundation and Yellowstone Association. For the volunteers they worked a total of 4,660 hours which was equivalent to about 2 full time GS 5 positions worth \$8,730.

## MONITORING

### Monitoring in Yellowstone National Park

**Population Status:** At the end of 2007 at least 171 wolves in 11 packs (10 breeding pairs), 3 non-pack groupings, and 7 loners occupied Yellowstone National Park (YNP) (Appendix Table 2). This represents a 26% increase over the 2006 population and is approximately equal to the population peak in 2003 (174 wolves). Both the northern range (NR) and interior wolf population increased, but despite the smaller area (11% of the park), the NR still had 55% of YNP wolves.

There was one new pack present in 2007, Gardner's Hole, but the status of this pack at the end of the year was unknown but it had likely dissolved meaning no new packs formed in 2007, a first since reintroduction.

Five packs (81 wolves, up 8% from 75) plus 13 wolves unassociated with packs made up the NR wolf population (25% total increase). Despite more wolves this is two fewer packs than 2006 as the Hellroaring Creek and Swan Lake packs are gone. The increased population is due to larger pack size for the remaining packs. Six packs (75 wolves, up 23% from 61) plus 2 loners make up the interior wolf population (26% total increase). No packs were lost nor were any gained although the status of the Hayden Valley pack was uncertain at the end of the year due to the loss of both breeding wolves (e.g., alphas). This pack existing between two larger packs, Mollies to the east and Gibbon Meadows to the west, was attacked in late October by Mollie's and both alphas were killed. The remaining 4 wolves, 3 pups and one yearling, wandered the park, but none of these wolves were radio collared so it was hard to track their movements and document their status. Pack size ranged from 4 (Hayden Valley at year's end) to 22 (Yellowstone Delta) and averaged 14.2, an increase compared to 2006 (pack size = 10.5) and this was mostly attributable to the increase in pack size for NR wolves.

Wolf-wolf clashes were again documented in 2007, especially on the northern range where wolf density is highest.

Average age at death has increased nearly every year and two especially old wolves died in 2007: male wolf #193 from Mollies's pack at 9 years of age (a mange related death, the first documented in the park) and male wolf #113 from the Agate Creek pack at 10 years of age. Both wolves held alpha status late into their life. In #113's case he remained in the pack after losing his dominant status, being tolerated by his son the new alpha, which seems to be an unusual occurrence for ex-alpha female wolves (ex-alpha females are not usually tolerated in the pack). Other notably old wolves are female #151, alpha female of the Cougar Creek pack who is 9 years of age, and female #126 presumably the alpha of the Delta pack at 10 years of age.

Across the park wolf distribution was unchanged, and has been so for several years indicating that all available wolf habitat is settled. Pack turnover, when it occurs, is always within the occupied wolf range and new areas of settlement have so far not been recorded.

Twenty-two wolves were radio collared by helicopter darting in 2007 and 33% of the wolves were collared in 91% of park packs at the end of the year.

**Reproduction:** Pup survival was excellent in 2007 (83% not counting over-summer mortality). Total pups survived was 64 or 37% of the population was pups at year's end (a total of 77 pups were counted at dens). All 11 packs reproduced but due to the loss of both the alpha male and female in the Hayden Valley pack at the end of the year this pack did not count as a breeding pair. Three packs had >1 litter of pups, one of which was the Hayden Valley pack which was the first pack in the park interior to have >1 litter. The other two packs were both from the northern range: Slough Creek and Oxbow Creek. Average litter size/pack (pups counted at dens in May and June) was 7.0 (this does not account for >1 female breeding) and average pups survived/pack (pups counted with packs in November/December) was 5.8.

Wolf Project staff visited every den site except Delta, Bechler and Gibbon Meadows.

**Mortalities:** Not counting over-summer pup mortality, 6 collared wolves died in 2006. These included 2 old adults (> 5 years) and 4 adults (2-5 years). Four males and 2 females died. Again the leading cause of mortality (67%) was intraspecific strife.

## **Yellowstone National Park Wolf Packs in 2007**

1) Leopold: (16 wolves: 13 adults/3 pups) The Leopold pack continues to thrive on their longtime territory centered around the Blacktail Deer Plateau. The pack continues to be led by the alpha pair of 534M and 209F (who bred together for the fourth time during 2007). The pair produced the only litter of pups for the pack, of which at least three of the four survived to year's end. This pack was the subject of intensive summertime study due to the presence of a downloadable GPS collaring recording fixes on the wolf 48 times/day (also see Summer Predation section).

2) Oxbow Creek: (16 wolves: 8 adults/8 pups) This pack had two litters totaling 11 pups, but one of those litters was only 1 pup and it died when the pack moved from their natal den to a second

den site. Eight pups survived to years end. This pack exists in an area of high pack turnover, being the fourth pack in ten years to occupy this territory. Other territories nearby had only one pack in the same period.

3) Agate Creek: (17 wolves: 8 adults/9 pups) Nine pups were born and all of them survived until the end of the year. The long time alpha male was injured before the breeding season so did not breed in 2007 but his son did. He was tolerated in the pack until his death in October dying at 10 years of age.

4) Slough Creek: (16 wolves: 7 adults/9 pups) In late 2006 this pack lost its alpha male due to intraspecific aggression. The breeding vacancy was quickly filled by a wolf from a neighboring pack, but this wolf was hit by a car in September. Another yearling from Agate replaces this alpha. Three wolves in this pack were killed by wolves from neighboring packs, one of these had a broken foot that had fused possibly inhibiting her ability to escape the attack. Nine of 11 pups survive to year end.

5) Druid Peak: (16 wolves: 9 adults/7 pups) Excellent pup survival as all seven pups born survived. Denning near a backcountry campsite where a permit was mistakenly issued and use of the site caused wolves to prematurely abandon the natal den moving the pups to another more remote site. Attacked neighboring Slough Creek pack at least twice killing two wolves.

6) Mollie's Pack: (14 wolves: 9 adults/5 pups) Occupied its typical territory in Pelican Valley but began moving west into Hayden Valley usurping territory and killing Hayden Valley wolves (killed both alphas). Longtime alpha male died at 9 years of age from mange related problems – first mange related death recorded in YNP. Continued to prey on bison in winter and face competition from grizzly bears over use of carcasses.

7) Yellowstone Delta: (22 wolves: 16 adults/6 pups) The largest pack in YNP living in the remote southeast corner of the park and into Wyoming this pack has traditionally denning in YNP and continued to do so in 2007. Difficult to collar, 5 wolves were collared in 2007, and this pack has been the subject of cooperative studies between WY Game & Fish Department and YNP.

8) Bechler: (11 wolves: 8 adults/3 pups) Like Delta this pack is difficult to collar and keep collars in, by the end of the year despite an ARGOS collar only the long-time, and old (9 years) alpha male was left radioed. Denning and spending much of their time in YNP, they also range into Wyoming and Idaho.

9) Cougar Creek: (7 wolves: 3 adults/4 pups) Living on the west side of the park near West Yellowstone they rarely leave YNP despite living close to the boundary. They did not produce pups in 2006 possibly due to the age (9 years) of the breeding female but successfully produced 4 pups this year doubling the size of this small pack.

10) Gibbon Meadows: (17 wolves: 11 adults/6 pups) A large and stable pack in the Madison-Firehole area of YNP they increased by 5 wolves in 2007. Like Mollie's pack in winter this pack has many bison available, but more elk. Unlike previous winters they preyed more on elk than bison.

11) *Hayden Valley*: (4 wolves: 1 adult/3 pups – NOT a BP) Living the past several years in Hayden Valley between two larger packs (Mollie's and Gibbon Meadows) this pack finally got squeezed out by Mollie's. In late October Mollie's killed both alphas and in the remainder of the year the remaining wolves traveled widely. During these travels a pup was probably killed by the Gibbon Meadows pack near Old Faithful. They had two litters this year, the first time this was documented in an interior pack and it occurred by an adult female being bred outside the pack and then returning. They have no radio collars.

*Other wolves*: Several temporary or unknown associations of wolves or groups along with loners made up the remainder of the YNP wolf population. The 2006 Hellroaring pack dissolved and the Gardner's Hole pack which formed in the same area as the Swan Lake pack likely broke up at year's end as well. Wolves from both the Leopold and Slough Creek packs traveled separately from their pack and associated with various other wolves during late 2007.

## **Monitoring in Wyoming outside Yellowstone National Park**

**Population status:** We combined 3 census techniques to estimate the total number of wolves in WY: 1) direct observations of wolves; 2) winter track counts of wolves traveling in snow; and 3) confirmed reports of wolf sightings from other agencies. We defined a pack as  $\geq 2$  wolves traveling together using a defined home range. A breeding pair was defined as  $\geq 2$  adults producing  $\geq 2$  pups that survived through 31 December of that year. We counted the number of wolves in packs containing radio collared wolves using visual observations from the ground and aerial telemetry flights. We tracked wolves in winter and counted the different sets of wolf tracks in snow. In areas where repeated sightings were confirmed, we incorporated those observations into our estimates. We averaged the high and low population estimates to calculate other statistics used to describe the wolf population in WY. Visual observations from telemetry flights in early January 2008 were also used to improve our year-end estimates.

From 1999 through 2007, we maintained radio collars on 20-30% of the wolf population in WY each year to monitor their movements, locate den and rendezvous sites, document breeding success, locate wolves to mitigate livestock conflicts, and aid in law enforcement. We used VHF radio collars for general monitoring purposes and used various types of GPS collars for specific research projects. In 2007, we monitored 52 radio collared wolves (30% of the population) in 16 packs (64% of the packs). A total of 36 wolves were radio collared in 2007 (24 wolves were collared by USFWS; 10 wolves by WS; 2 wolves were trapped by a coyote trapper and collared by the USFWS). Twelve wolves from 7 different packs were collared with Argos GPS collars that were scheduled to last from January 2007 through January 2008; however, only 3 of those collars were still fully functioning in January 2008.

As of 31 December 2007, we estimated that >188 wolves inhabited western WY in 2007. Twenty-five packs contained 172 wolves (Table 1) and another >16 wolves (single wolves and smaller groups of wolves with unknown breeding status) were located throughout the western portion of the state (Table 2). Pack size ranged from 2 to 13 and averaged 6.9 wolves.

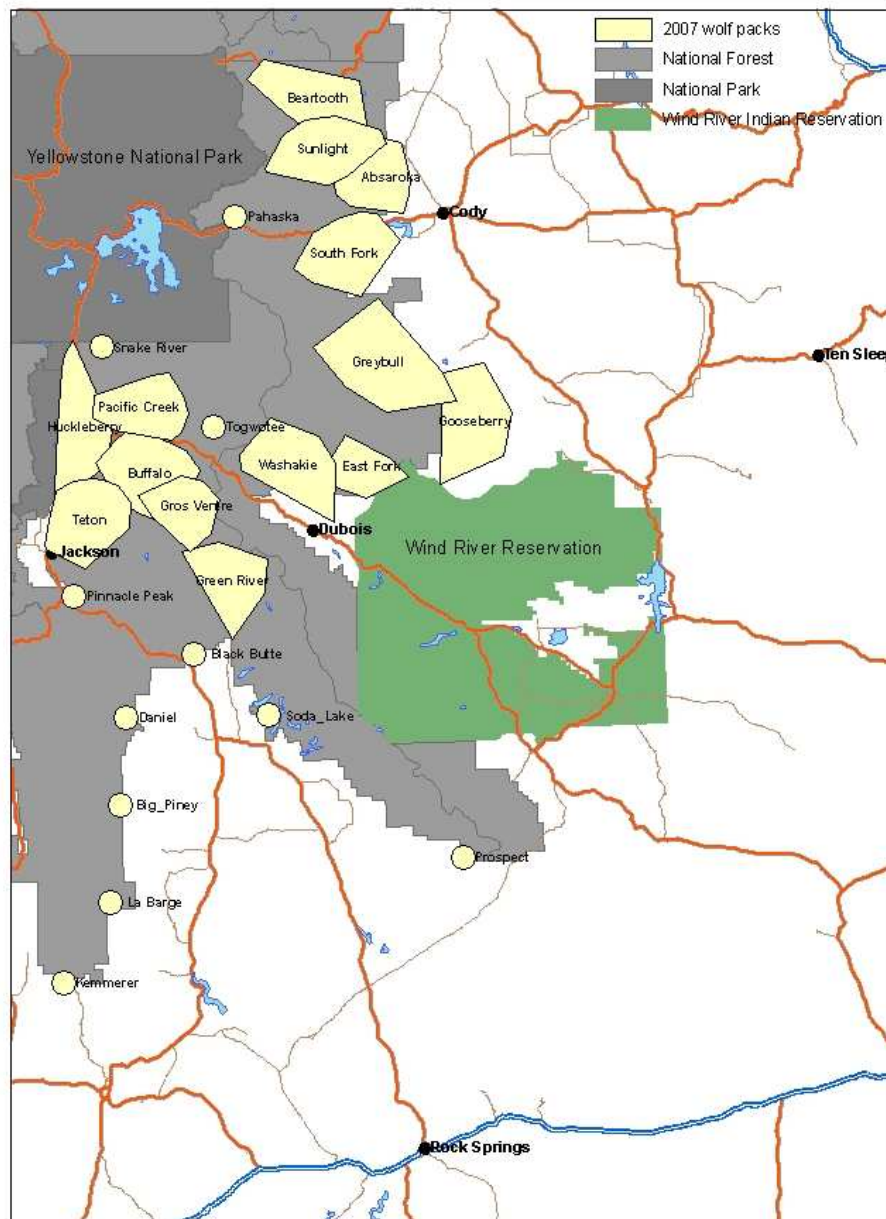


**Table 1.** Composition of confirmed wolf packs in WY in 2007.

Pack name	# adults	# pups	# wolves
1) Beartooth	4	4	8
2) Sunlight	7	4	11
3) Absaroka	2	0	2
4) Pahaska	>2	?	>2
5) South Fork	6	4	10
6) Greybull River	4	4	8
7) Gooseberry	1	5	6
8) East Fork	4	4	8
9) Washakie	5	6	11
10) Togwotee	6	4	10
11) Gros Ventre	5	8	13
12) Pacific Creek	9	4	13
13) Snake River	5	6	11
14) Huckleberry	3	2	5
15) Buffalo	7	6	13
16) Teton	3	5	8
17) Pinnacle Peak	6	?	6
18) Daniel	4	0	4
19) Green River	4	2	3
20) Black Butte	2	?	2
21) Soda Lake	5	?	5
22) Big Piney	>2	?	>2
23) La Barge	>2	?	>2
24) Prospect	>3	?	>3
25) Kemmerer	>3	?	>3
Total:	104	68	172

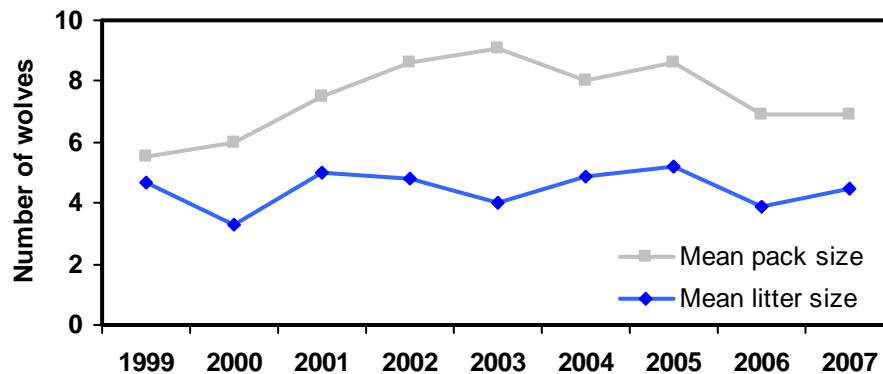
**Table 2.** Misc. wolves and unconfirmed packs in WY:

Pack/general area	# adults	# pups	# wolves
Carter Mtn.	1	0	1
Big Horn Mtns.	≥2	?	≥2
Bliss Creek	?	?	?
Driggs	>2	?	>2
S. of Rock Springs	>4	?	>4
Misc. dispersers	7	?	7
Total:	16	?	16



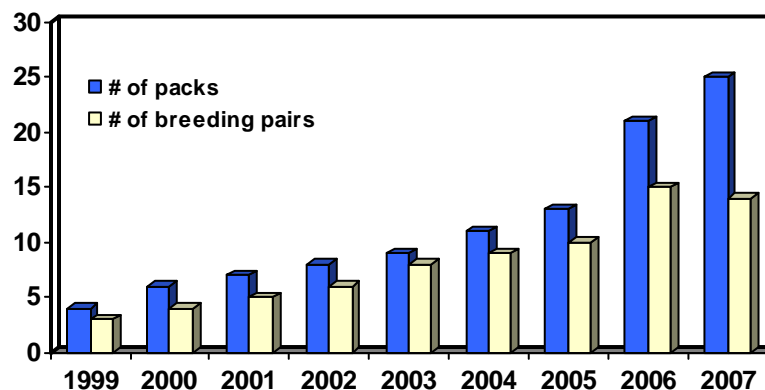
**Figure 1.** Home ranges of confirmed wolf packs in Wyoming 2007.

**Reproduction:** Fifteen packs produced at least 68 pups that survived through December 2007; however, only the following 14 packs were counted as breeding pairs: Washakie, Pacific Creek, Beartooth, Sunlight, South Fork, Green River, Greybull River, Buffalo, Gros Ventre, Snake River, East Fork, Togwotee, Teton, and Huckleberry (Appendix Tables 4a and 4b). Mean litter size was 4.5 pups per litter (Figure 2). The Gooseberry Packs produced  $\geq 2$  pups that survived through December 2007; however, only one adult in the pack survived and therefore, the pack was not considered a breeding pair. We were not able to confirm pup production in 9 packs: Pinnacle Peak, Pahaska, Prospect, Big Piney, Kemmerer, Daniel, Black Butte, Soda Lake, and La Barge.



**Figure 2.** Mean pack size and mean litter size for wolves in WY from 1999 through 2007.

**Population growth:** In 2004, we reported that the wolf population increased 23% from 82 wolves in 2003 to 101 wolves in 2004. In 2005, the wolf population increased 33% from 101 wolves in 2004 to 134 wolves in 2005. The number of wolves increased 31% in 2006 to >175 wolves. The wolf population in WY increased only 7% to 188 wolves in 2007 (Figure 3).



**Figure 3.** Number of wolf packs and breeding pairs in WY 1999 – 2007.

***Mortalities:*** In 2007, a total of 75 wolves (29% of the total population) were known to have died in WY. Causes of mortality included: control = 63 (83% of documented mortality); under law enforcement investigation = 5 (7%); natural = 2 (3%); other causes = 3 (4%); and unknown = 2 (3%).

### ***Disease Surveillance:***

#### Mange

Sarcoptic mange is a highly contagious skin disease caused by mites (*Sarcoptes scabiei*). Mange is commonly reported in mammals throughout the world, including wolves from Canada, Alaska, Wisconsin, Minnesota, and Michigan. From 1995 through 2007, we identified wolves infested with sarcoptic mange in WY and Montana. We predict that mange infestation in the northern Rocky Mountain wolf population will progress as it has in other parts of North America by affecting local wolf packs in episodic fashion, but will not threaten regional wolf population viability.

Sarcoptic mange was first documented in WY in 2002, when a severely mange-infested wolf from the Absaroka Pack, east of YNP, was captured and radio collared. In 2003 and 2004, mange was documented in the Sunlight and Absaroka Packs in the Sunlight Basin area. Three wolves infested with mange from the Sunlight Pack were collared in 2004; however, none of the wolves from the Sunlight Pack appeared to have mange in 2005 or 2006. We suspect the wolves infested with mange in the Absaroka Pack died in winter 2005. In spring 2006, other healthy wolves recolonized the area and continued to use the same general home range of the old Absaroka Pack. However, in summer 2006, several wolves in this re-established Absaroka Pack were again infested with mange. YNP wolf #453m dispersed from the Slough Creek Pack and settled within the home range of the Absaroka Pack in spring 2006. Wolf #453m became severely infested with mange, began harassing livestock, and was eventually shot in a control action in 2006 for killing cattle.

In 2007, we documented mange in the Absaroka, Sunlight, South Fork, and Pacific Creek Packs. Mange was not detected on all members of the packs once a pack member was diagnosed with mange. We identified some wolves in the Absaroka and Sunlight Packs that had recovered from previous mange infections.

#### Canine Distemper and Canine Parvovirus

Canine distemper (CDV) and canine parvovirus (CPV) are highly contagious diseases that infect domestic dogs, coyotes, fox, raccoons, skunks, and wolves. Forty-five percent of WY wolves tested since 2001 were exposed to CDV and 97% of wolves tested were exposed to CPV. No evidence suggests that CDV or CPV are significant causes of mortality of wolves in WY in 2007.

## RESEARCH

### Research in Yellowstone National Park

#### *Wolf-Prey Relationships*

Wolf-prey relationships were documented by observing wolf predation directly and by recording the characteristics of wolf prey at kill sites. Wolf packs were monitored for two winter-study sessions during which wolves were intensively radio-tracked for 30-day periods in March and from mid-November to mid-December. The Leopold, Druid Peak, Agate Creek (March 2007), and Oxbow Creek (November-December 2007) packs were the four main study packs monitored by three-person ground teams and all packs parkwide were monitored from aircraft. In addition, ground crews opportunistically monitored the Slough Creek, Hellroaring, and Mollie's packs collecting prey selection and kill rate data. The Cougar Creek, Hayden, and Gibbon Meadows packs were monitored from aircraft only. The Yellowstone Delta and Bechler packs were rarely located by ground or air due in part to their absence from the park or poor conditions for aerial monitoring in southern YNP. Project staff recorded and entered into a database behavioral interactions between wolves and prey, predation rates, the total time wolves fed on their kills, percent consumption of kills by wolves and scavengers, characteristics of wolf prey (e.g., sex, species, nutritional condition), and characteristics of kill sites. In addition, similar data were collected opportunistically throughout the year during weekly monitoring flights and ground observations.

#### *Composition of Wolf Kills*

Project staff detected 323 kills (definite, probable, and possible combined) made by wolves in 2007, including 272 elk (84 %), 11 bison (3.4%), four deer (1 %), three moose (<1%), one pronghorn (<1%), one golden eagle (<1%), four coyotes (1%), two black bears (< 1%), one red fox (<1%), one otter (<1%), seven wolves (2%), and 16 unknown prey (5%). The composition of elk kills was 21 % calves (0–12 months), 16 % cows (1-9 years old), 12 % old cows ( $\geq 10$  years old), 41 % bulls, and 10 % elk of unknown sex and/or age. Bison kills included six calves (unknown sex), three bulls, and two unknown sex adults.

Preliminary examination of winter predation rates in 2007 shows a decrease in kill rate compared to earlier years. Winter predation rates for the period of 1995-2000 showed wolves residing on the northern range killed an average of 1.8 elk/wolf/30-day study period. Changes in prey selection (shift to bull elk from elk calves) and an increase in scavenging on winter-killed ungulates by wolf packs factor in to this decrease in kill rates.

### Winter Studies

**March** - During the 2007 March winter study (30 days), study packs were observed for 372 hours from the ground. The number of days wolf packs were located from the air ranged

from 8 (Hellroaring) to 21 (Leopold). Sixty-six definite or probable wolf kills were detected, including 57 elk, six bison, two moose, and one unknown species. Among elk, 14 (25%) were calves, 13 (23%) were cows, 29 (51%) were bulls, and one (2%) was of unknown sex adult. In addition, 14 ungulates (10 bison, three elk, one moose) that died from other natural causes were scavenged by wolf packs. Documenting the consumption of biomass from ungulates not killed by wolves is important to explaining variation in kill rates through time. Lower than expected kill rates, particularly for larger wolf packs, can sometimes be explained by increased scavenging of winterkilled ungulates.

***November-December*** - During the 2007 November–December winter study (30 days), wolves were observed for 347 hours from the ground. The number of days wolf packs were located from the air ranged from 12 (Gibbon) to 14 (Leopold, Slough Creek, Oxbow Creek, Agate Creek, Druid Peak, Mollie's, Cougar Creek). Aerial monitoring was effected by poor weather conditions. Forty-seven definite or probable wolf kills were detected during the November-December 2007 winter study. Project staff only documented elk being killed by wolves, and their breakdown includes 14 (30%) cows, 18 (38%) bulls, 14 (30%) calves, and one (2%) were of unknown sex and age.

After a switch to selection for calves in the early winter study of 2006, this year returned to the previous years' pattern of selection for bulls. Although difficult to test, we hypothesize that 2007's drought conditions resulted in poor forage quality, which when coupled with the energetically costly behavior of rutting bull elk, make this age and sex class more vulnerable to predation in early winter compared to females and calves.

### ***Summer Predation***

In the summer of 2007, project staff continued efforts to document summer predation patterns of wolves. Documenting the predatory habits of wolves in summer is problematic due to the lack of snow for tracking, increased nighttime activity of wolves, lack of pack cohesiveness, and smaller prey packages leading to quick consumption and loss of evidence. Traditionally, the best data concerning wolf summer food habits have come from analysis of scat contents collected at den and rendezvous sites. Although this effort on scat collection continued in 2007, GPS collar technology was used to facilitate a greater understanding of summer predation patterns.

In the 2007 capture season, the Wolf Project deployed three downloadable GPS (Global Positioning System) collars on the northern range to enhance understanding of: 1) seasonal predation patterns; 2) spatial and temporal interactions with other wolf packs and other carnivores; 3) movements with respect to dens during pup rearing season; and 4) territory size, use, and overlap. Using GPS collars with downloadable data acquisition technology, the goal was to perform weekly data gathering on collars programmed to collect location data every 30 minutes. This approach has proven successful in prior years for summer predation studies by yielding high-resolution wolf movement data revealing wolf prey selection and kill rates, even for newborn elk calves.

As has been the case over the past several years, malfunctioning collars made summer predation patterns challenging to document. Oxbow wolf 589F and Druid 570M had GPS collars that failed shortly after collaring. However, the GPS collar deployed on a Leopold yearling female (593F) functioned well, allowing us to obtain our best summer predation sequence to date. Project staff worked intensively to locate and perform weekly downloads on 593F's collar, as well as map and search clusters for potential kills. Over the summer, crew members hiked over 450 miles in the Leopold pack's territory to investigate clustered GPS points. During this effort, a total of 30 wolf kills were documented including 29 elk (58% bulls, 17 % cows, 24% calves) and one mule deer doe. Several patterns emerged. First, there was a selection for bulls overall, which may reflect seasonal vulnerability, as well as availability in the Leopold pack's territory. The majority of bull elk (80%) killed in May had gelatinous bone marrow, indicating that they had still not recovered from winter's effects. Second, as the summer progressed, wolves began to utilize elk calves and cows more, indicating a response to their availability and vulnerability within their territory. More intensive field work and modeling efforts are planned for summer 2008 to understand the relationship between pack size, prey availability, and number of GPS collared wolves to elucidate summer predation patterns.

## Population Genetics

Collaborative efforts between the Wolf Project and the University of California, Los Angeles continued in 2007. With Dan Stahler attending UCLA for the first half of 2007, the Wolf Project and members of the Dr. Robert Wayne's canid genetics lab published the first round of analyses on Yellowstone wolf genetics in the journal *Molecular Ecology* (see Publications for 2007). These analyses addressed an important question concerning the reintroduction of endangered species by examining the degree to which genetic variation is preserved and the behavioral mechanisms involved. By analyzing DNA from hundreds of Yellowstone wolves over the first 10 years of recovery, it was found that the population maintained high levels of genetic variation with low levels of inbreeding. The genealogies of major pack lineages were reconstructed based on genetic and field data allowing us to discover that Yellowstone wolves avoid inbreeding through a wide variety of behaviors, including absolute avoidance of breeding with related pack members, male-biased dispersal to packs where they breed with non-relatives, and female-biased subordinate breeding. We documented a greater diversity of breeding patterns in Yellowstone than previously observed in any other natural wolf population. Inbreeding avoidance is nearly absolute despite the high probability of within-pack inbreeding opportunities and extensive kinship ties between adjacent packs.

In addition to this publication, a larger scale analysis of genetic diversity and gene flow between the three Rocky Mountain recovery areas was nearly complete at the end of 2007. These analyses will address issues of population connectivity and migratory exchange among recovery areas and the importance this has for genetic diversity and long-term population sustainability.

## **Collaborative Research**

The wolf project and Yellowstone Park Foundation provided financial and in-kind support for collaborative research with scientists at other institutions, including universities, interagency divisions, and non-government research organizations. These investigations required wolf project staff to assist graduate students and outside researchers in their efforts to better understand wolf ecology, ecosystem function, and conservation work, much of which is pioneering research.

### **Wolf Project Students: Direct Assistance**

Three students worked in collaboration with the Wolf Project in 2007: Daniel Stahler, Emily Almberg, and Matt Metz. All three are long-time employees on the project that have moved on to work in a new capacity and are partially supported by project funding. Dan's project focuses on combining behavioral data gathered in the field with genetic data gleaned from blood samples and overlaying the two techniques to better understand wolf social behavior. Dan works with Dr. Robert Wayne at the University of California at Los Angeles. Emily's project focuses on wolf diseases both from a current and historical perspective. With severe mortality caused by disease in 2005, and evidence of a smaller outbreak in 1999, Emily plans to fully explain the role of diseases for wolf population ecology. Emily works with Dr. L. David Mech and the University of Minnesota. Matt's project will focus on summer predation patterns in wolves by incorporating downloadable GPS collar technology and modeling techniques. Matt will be working with Dr. John Vucetich and Michigan Technological University.

*Title: Behavioral, ecological, and genetic influences on life-history strategies and social dynamics of gray wolves.*

*Graduate Student:* Daniel Stahler, doctoral student

*Committee Chair:* Dr. Robert Wayne, University of California, Los Angeles

*Project Summary:* The evolution of complex societies, such as seen in wolves, is greatly influenced by how ecological and social constraints impact population structure and mating systems. In combination with the underlying genetic structure of wolf packs, aspects of wolf ecology such as reproduction, dispersal, pack formation, and territoriality is predicted to vary with the abundance and distribution of resources. This research will investigate the link between socioecological conditions and these aspects of wolf ecology in Yellowstone. This project will take advantage of long-term datasets following the 1995 reintroduction: 1) a complete population pedigree of marked individuals resulting from the integration of molecular and field-based behavioral data; and 2) predator-prey and wolf population dynamics. By combining field and laboratory-based data, this study will ask questions concerning breeding strategies, reproductive success, territoriality, and pack interactions and how it is associated with kinship and ecological condition. By combining long-term ecological, behavioral, and molecular datasets, this study will enhance our understanding of the evolution of complex, kin-structured societies, as well as



provide a better understanding of how social and ecological conditions are related to wolf population dynamics and conservation.

*Project Activity in 2007:* Coursework, wrote research proposal, conducted field work, published paper on Yellowstone genealogy and genetic diversity.

*Anticipated Completion Date:* 2010

*Title: A comprehensive survey of the infectious diseases and parasites of Yellowstone wolves: Implications for population dynamics and management*

*Graduate Student:* Emily Almberg, doctoral student

*Committee Chair:* Dr. L. David Mech, University of Minnesota, St. Paul

*Project Summary:* In 1999 and 2005, the Yellowstone wolf population experienced significantly reduced pup recruitment suggestive of a disease outbreak. Despite fuelling abundant speculation, these two suspected outbreaks have highlighted how little is known about the presence and role of disease in the Yellowstone wolf population. The present study seeks to (i) identify and describe the spatial and temporal patterns of select pathogens and parasites in the Yellowstone National Park (YNP) and the Greater Yellowstone Ecosystem (GYE) wolf populations, (ii) to attempt to understand the impacts of disease on population parameters such as adult wolf mortality and pup survival, (iii) to track the distribution, prevalence, and population-level effects of sarcoptic mange among wolves in YNP and the GYE, and (iv) to address the potential role of domestic dogs and sympatric carnivores in pathogen/parasite invasion and persistence in YNP. The study will begin its first field season in summer, 2007.

*Project Activity in 2007:* Coursework and development of research questions.

*Anticipated Completion Date:* May, 2010

*Title: Summer patterns of prey selection and kill rates for gray wolves.*

*Graduate Student:* Matt Metz, master's student

*Committee Chair:* Dr. John Vucetich, Michigan Technological University

*Project Summary:* The summer predation patterns of wolves are mostly unknown, which creates an important gap of knowledge with regards to wolf yearly kill rates. Currently, wolf kill rates from winter are often projected throughout the year in order to estimate a wolf's impact on the prey population for the entire year. This likely overestimates kill rates (at least in kg/wolf/day, not necessarily in ungulates/wolf/day) due to the data being gathered only in winter, when adult prey become increasingly vulnerable. This data has often been projected for the entire year

because of the difficulty of finding kills in the summer due to a lack of snow and increased plant foliage. Additionally, the need to provide for pups and the utilization of small prey items change the foraging strategy of wolves in the summer. Finally, the presence of both grizzly and black bears in Yellowstone may cause wolves to spend only a short time period at a kill. Due to these challenges, GPS collars deployed on individual wolves will help to identify and search clusters in an attempt to find summer kills and then examine their characteristics. Additionally, ecological modeling approaches will be used to incorporate variables of the wolf, pack, landscape, prey, and time of year to improve accuracy of predation rate estimates.

*Project Activity in 2007:* Summer fieldwork of GPS collar download and cluster search, development of research questions.

*Anticipated Completion Date:* May, 2010

### **Other Research or Collaborative Work with the YNP Wolf Project**

<b><i>Topic</i></b>	<b><i>Collaborator</i></b>	<b><i>Institution</i></b>
Wolf-cougar interactions	Toni Ruth,	Wildlife Conservation Society
Wolf-coyote interactions	Robert Crabtree, Jennifer Sheldon	Yellowstone Ecological Research Center
Wolf-bear interactions	Charles Schwartz, Mark Haroldson, Kerry Gunther	Interagency Grizzly Bear Study Team, Bear Management Office/YCR
Wolf-carnivore interactions	Howard Quigley	Beringia South
Wolf population genetics	Robert Wayne, Bridgett vonHoldt, John Pollinger	University of California, Los Angeles
Wolf-elk relationships- Madison-Firehole Watershed	Bob Garrott, Matt Becker, Claire Gower, Shana Dunkley	Montana State University
Wolf-pronghorn	P.J. White, John Byers	YCR, University of Idaho
Wolf-willow	Evelyn Merrill, Francis Singer, Roy Renkin, Bill Ripple, David Cooper, Tom Hobbs, Don Despain, Nathan Varley	Univ of Alberta, USGS, YCR, Colorado State Univ.
Wolf –aspen	William Ripple, Eric Larsen, Roy	Oregon State University, Univ of Wisconsin at Stevens Point, YCR,

	Renkin, Matt	Univ. of Montana
	Kauffman	
Wolf –trophic cascades	L. David Mech;	USGS; University of Alberta;
	Mark Boyce,	Michigan Technological
	Nathan Varley;	University
	Rolf Peterson	University of Minnesota
	Dan MacNulty	
	John Vucetich	
Wolf predation	Tom Drummer,	Michigan Technological
	John Vucetich,	University
	Rolf Peterson	
Wolf survival	Dennis Murray	Trent University

### **Research in Wyoming outside Yellowstone National Park**

*Wolf habitat selection in a variety of land-use types: assessing the impact of elk and cattle distribution on wolf habitat use and cattle depredation patterns in the Absaroka Range of Wyoming.*

*Graduate Student:* Abby Nelson, University of Wyoming, Laramie, Wyoming.

*Major advisors:* Matt Kauffman and Steven Buskirk, University of Wyoming.

*Cooperators:* U.S. Fish and Wildlife Service, USDA Wildlife Services, and Wyoming Game & Fish Department.

*Status:* Field work began in summer 2007.

*Project Summary:* In collaboration with the US Fish and Wildlife Service and the Wyoming Game and Fish Department, the University of Wyoming Cooperative Fish and Wildlife Research Unit is entering the second year of its Absaroka wolf-cattle study. The first objective of this study is to analyze the temporal changes in wolf habitat selection in response to seasonally driven elk and cattle distribution within two wolf pack territories in the Absaroka Range in Wyoming. The second objective is to locate wolf-killed cattle and native prey using fine-scale spatial data from wolf GPS collars. Ultimately, an analysis of kill sites incorporating wolf habitat use, ungulate distribution and landscape attributes will provide a gradient of risk for cattle depredations and will provide wildlife managers with information on species, age and sex of native wild ungulates that are killed by wolves in the study area.

To meet the first objective, wolf habitat selection information was collected throughout 2007 by six Argos GPS collars. In summer 2007, to address the second objective, kills were located in the Sunlight and Absaroka pack territories by searching GPS location clusters based on a 20-minute fix rate. Ungulate distribution flights were conducted on a weekly basis to help determine the extent to which cattle depredations are mediated by the distribution of resident native prey. Eight

depredations occurred in 2007 within the two packs' territories (1 within the cluster search period). Within the Absaroka and Sunlight packs, five deer, three bull elk, and ten elk calves were located as probable wolf kills. Non-wolf-killed carcasses found at GPS clusters included six cattle and one cow elk. Other prey items found at GPS clusters included one coyote, a skunk, a flicker and one unknown ungulate. Due to malfunctions with both GPS collars deployed for the predation study, the summer 2007 predation study period was truncated by 33%, resulting in a smaller than predicted sample of kills. In 2008, the six Argos GPS collars will be replaced and an additional field season will be conducted with three predation collars during summer and early fall.

*Absaroka elk ecology project*

*Graduate Student:* Arthur Middleton, University of Wyoming, Laramie, Wyoming.

*Major advisor:* Matt Kauffman, University of Wyoming.

*Cooperators:* U.S. Fish and Wildlife Service and Wyoming Game & Fish Department.

*Project Summary:* In collaboration with US Fish and Wildlife, the Wyoming Game and Fish Department and the University of Wyoming are entering the second year of the Absaroka Elk Ecology Project between Cody, Wyoming and Yellowstone National Park. The project's primary objectives are to 1) determine proportion of migratory and resident elk in the Clark's Fork herd unit; 2) determine the routes and timing of seasonal movements by migratory elk; 3) increase understanding of elk use of private lands for improved habitat conservation; and 4) understand the influence of wolves on elk habitat use, movements, and behavior. To meet these objectives, the project relies on a sample of approximately 60 GPS-collared elk cows in the Clark's Fork Herd Unit, and two GPS-collared wolves in each of the three wolf packs—Sunlight, Absaroka, and Beartooth Packs—that prey on the Clark's Fork elk. Starting in winter 2008, a PhD student from the University of Wyoming's Cooperative Fish and Wildlife Research Unit will complement this accumulating spatial dataset on elk and wolf movements by conducting field observations on the behavior of collared elk and their surrounding groups. The body condition and pregnancy status of collared elk, sampled in biannual recaptures, will be related to three winters' habitat selection, movement, and behavioral data to address questions of how temporal, spatial, and individual gradients of elk condition might influence elk responses to wolf predation risk. Ultimately, the study aims to address multiple applied questions directly relevant to elk and wolf management, as well as ongoing conceptual questions relevant to our understanding of ungulate-predator interactions in large-scale temperate ecosystems.

*Winter predation patterns of wolves near Jackson, Wyoming:* USFWS Wolf Recovery Program, Jackson, Wyoming.

*Cooperators:* Grand Teton National Park, National Elk Refuge, Bridger-Teton National Forest, and Wyoming Game and Fish Department.

**Project Summary:** We used VHF radio telemetry to monitor the movements of collared wolves near Jackson, Wyoming. We tracked wolves in the snow from December through March each year to locate 330 carcass remains of ungulates killed or scavenged by wolves in winter from 2000 through 2007. Winter prey species consisted of 95% elk (*Cervus elaphus*), 4% moose (*Alces alces*), 0.7% deer (*Odocoileus hemionus*), and 0.3% bison (*Bison bison*). Prey composition of elk killed by wolves was 39% cows, 15% bulls, and 46% calves. Prey composition of moose killed in winter was 53% cows and 47% calves. Mean age of adult elk killed was 9.3 years, and the oldest elk was 23 years old. Prior to wolf recolonization in 1999, elk and moose calf/cow ratios declined from 1989 through 1999, and the 10-year average ratio was 28.8 elk calves/100 cows and 41 moose calves/100 cows. Since wolf recolonization, calf/cow ratios averaged 25.5 elk calves/100 cows and 33 moose calves/100 cows.

### Other Collaborative Research Projects with the USFWS Wolf Recovery Program

<b>Topic</b>	<b>Collaborators</b>	<b>Institution</b>
Lead ingestion by scavenging carnivores in the Yellowstone ecosystem	Tom Rogers	Beringia South
Summer food habits of wolves near Jackson, Wyoming	Bonnie Trejo Steve Cain	Grand Teton National Park
Population genetics of wolves in the GYA	Robert Wayne Bridgett vonHoldt	Univ. of California, Los Angeles
Wolf Movements/Dispersals	Douglas McWhirter, L.D. Mech, Doug Smith	Wyoming Game & Fish USGS, NPS

## MANAGEMENT

### Management in Yellowstone National Park

#### *Area Closures*

On the Northern Range, temporary closures were instituted around the den sites of the Oxbow Creek, Slough Creek, and Druid Peak packs during the highly sensitive periods following the birth of pups. All closures were lifted by mid-May. In the interior, the Hayden Valley pack denned close to a trail and were highly visible from the road, leading to a temporary closure of a

section of hiking trail and off-trail hiking. Despite this level of protection, this pack was viewed from across the Yellowstone River at close proximity to hundreds of people. This pack, possibly as a result of this close contact with people, has made them the most human tolerant of any pack in the park, a concern both for their and human welfare. Additionally, the uncollared Snake River pack that dens near the south entrance of the park had a temporary closure to off trail travel along a section of trail near their den site.

### ***Wolf Road Management Project (Formerly Druid):***

Since wolf reintroduction, Lamar Valley and other areas in the park have become premier locations worldwide to observe free-ranging wolves. The main pack of interest has been the Druid Peak pack, which had denned in the valley from 1997 through 2004. Since then when the Druid Peak pack has not been visible, other packs such as, Slough Creek or Agate Creek, have been able to fill the void. Nonetheless, each year visitor numbers have grown and in 2000, the Yellowstone Center for Resources (YCR), Resource and Visitor Protection, and Division of Interpretation cooperated to better deal with the opportunities and problems that accompany increasing visitors that want to see wolves. As a result, the Druid Management Project was initiated, with the following objectives: 1) human safety: protect visitors that are viewing wolves alongside the road, and control both traffic along the road and parking to prevent an accident; 2) wolf safety: protect wolves from vehicle strikes, permit wolves to cross roadways without harassment from visitors, and protect the closed area around the den from visitor intrusion; 3) visitor enjoyment: through protection of natural wolf behavior, preserve visitor opportunity to view wolves and interpret wolf and other wildlife ecology to visitors; and 4) wolf monitoring and research: continue to monitor and study the denning behavior, predation, activity, and interactions of wolves with other wildlife. Since the Druid Peak pack is less visible than they were, the project has evolved to manage other packs and educate visitors where they encounter wolves.

The 2007 Druid Road Management Project season started on 5/29 and ended on 9/22, a period of 117 days. This was the eighth year of the project. At least 32,600 people observed wolves while our staff was working, an estimate that is considered an underestimate by independent researchers (J. Duffield et al., University of Montana) in the park who estimate the number of visitors observing wolves was closer to 310,046. Our staff made 8,775 visitor contacts and gave 230 informal talks to 2,300 visitors for a total of 11,075 visitor contacts. Wolves were in view for 750 hours and visible 117 out of 117 possible days to view them (sighted 100% of the days).

The 2007 season was very different from recent seasons. The Slough Creek Pack, a pack that had been very visible to visitors in other springs, denned out of sight of the road. The adult Slough wolves were only periodically visible during the first half of the season. In August and September, the pack used rendezvous sites that at times enabled visitors to see adults and pups.

The Druid Peak Pack also denned out of sight of the road and were not often visible during the early portions of our season. The Druids were more visible during the later part of the season. The Agate Creek Pack denned in their usual area at Antelope Creek and was occasionally visible

during the first two thirds of the season. Around mid-August, visitors regularly saw the adults and pups. The Agates were visible for a much longer period in 2006 and far more visitors saw them that year.

Due to the lower number of wolf sightings during the first half of the season in our primary area, Yellowstone's Northern Range, the road management crew often traveled to Hayden Valley. The Hayden Valley Pack became very visible to visitors starting in early July and was seen on a nearly daily basis from then to the end of our season.

## **Management in Wyoming outside Yellowstone National Park**

### ***Livestock Depredation & Management***

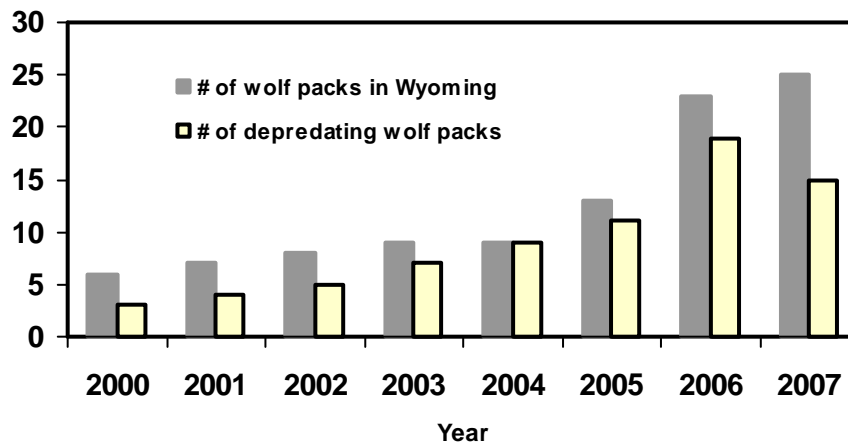
Potential livestock depredations in WY were investigated by WS and USFWS. Depredations were classified as confirmed, probable, or other based on specific criteria agreed upon by the USFWS and WS. The following livestock depredation statistics were based on reported livestock losses and do not reflect lost or missing livestock. In 2007, wolves in WY were responsible for killing at least 91 livestock (including 71 confirmed and 20 probable depredations) and 3 dogs (2 confirmed and 1 probable). Confirmed livestock depredations included 55 cattle (36 calves; 19 cows/yearlings) and 16 sheep (2 ewes; 14 lambs) (Appendix Tables 2, 5a, and 5b). The total number of livestock depredations recorded in 2007 decreased significantly from 162 confirmed depredations in 2006 down to 71 confirmed depredations in 2007 (Table 3).

**Table 3.** Confirmed livestock depredations in WY from 1999 through 2007.

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Cattle	2	3	18	23	34	75	54	123	55
Sheep	0	25	34	0	7	18	27	38	16
Dogs	6	6	2	0	0	2	1	1	2
Goats	0	0	0	0	10	0	0	0	0
Horses	0	0	0	2	0	1	0	1	0
Wolves controlled	1	2	4	6	18	29	41	44	63

### ***Number of Packs Involved in Depredations***

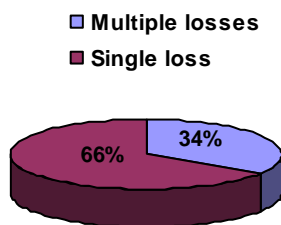
Since 1999, the WY wolf population has increased annually and wolves have recolonized new areas in northwest WY. Wolves living in areas with relatively high native ungulate densities and relatively low exposure to domestic livestock caused fewer conflicts with livestock producers. Wolves that recolonized areas where large numbers of livestock graze on private and public lands were responsible for chronic depredations on domestic livestock. Fourteen of the 25 known packs in WY were involved in at least 1 depredation in 2007 (Figure 4).



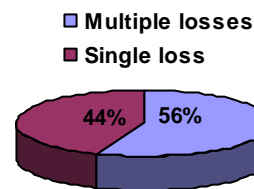
**Figure 4.** Annual number of wolf packs in WY and number of wolf packs that are involved in at least 1 livestock depredation/given year.

#### *Frequency of Depredations to Individual Producers*

In 2007, we documented 29 people who experienced depredations by wolves. Each depredation event was recorded as confirmed or probable and included all cattle, sheep, dogs, and horses that were killed or injured by wolves. Ten people (34%) experienced multiple depredation events by wolves and 19 individuals (66%) experienced a single depredation by wolves in 2007 (Figure 5). Twenty-five people had animals killed by wolves that were recorded as strictly confirmed depredation events. Fourteen of these individuals (56%) had losses due to wolves more than once, and eleven people (44%) experienced a single depredation by wolves in 2007 (Figure 6).



**Figure 5.** Frequency of multiple and single losses of all recorded wolf damages.

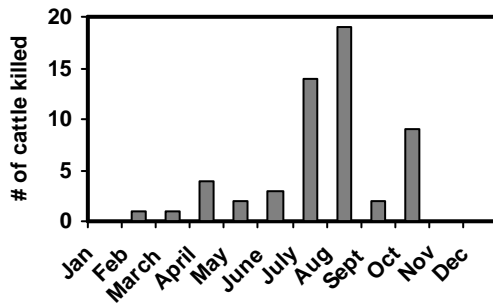


**Figure 6.** Frequency of multiple and single losses of all confirmed wolf depredations.

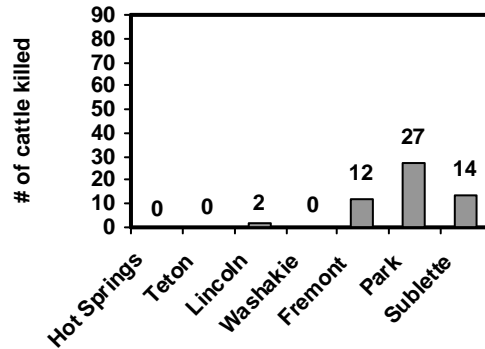


### *Time of Year and Location of Livestock Depredations*

Cattle depredations followed a seasonal pattern in 2007 with the highest number of depredations occurring in late summer from July through October (Figure 7). In 2007, confirmed cattle depredations occurred in 4 counties: Park 49% (n=27), Sublette 25% (n=14), Fremont 22% (n=12), and Lincoln County 4% (n=2) (Figure 8).

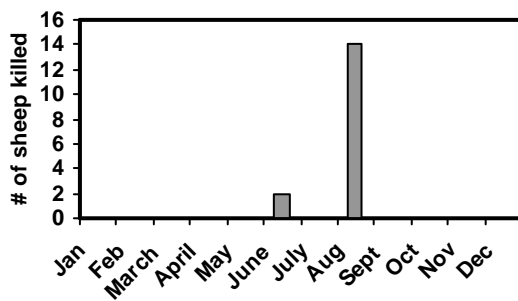


**Figure 7.** Number of confirmed cattle depredations/month.

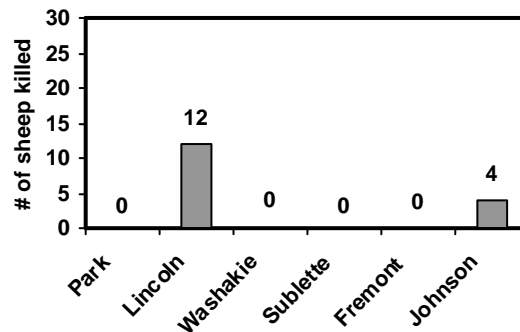


**Figure 8.** Number of confirmed cattle depredations/county.

In 2007, sheep depredations occurred during June and July (Figure 9) in 2 counties: Lincoln 75% (n=12) and Johnson 25% (n=4) (Figure 10).



**Figure 9.** Number of confirmed sheep depredations/month.

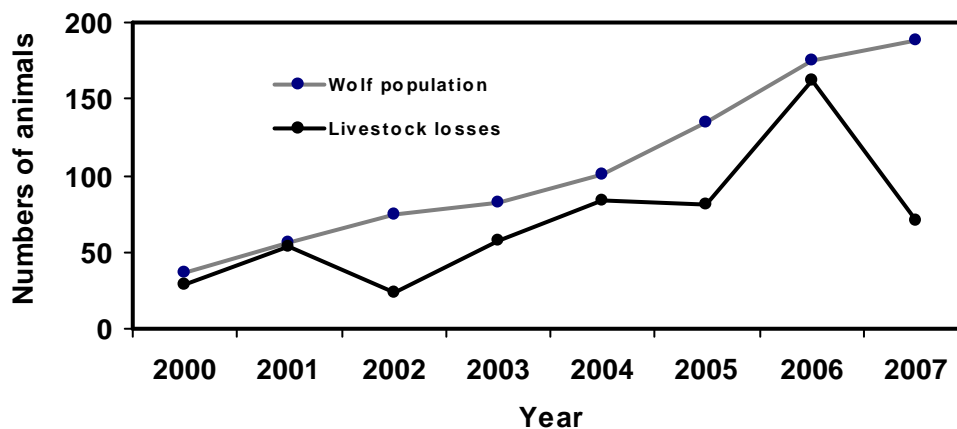


**Figure 10.** Number of confirmed sheep depredations/county.

## ***Livestock Depredation Control***

Control actions in response to confirmed livestock depredations included trapping and radio collaring wolves; intensive monitoring; increasing riders on grazing allotments; harassing wolves with rubber bullets, lights, and cracker shells; moving livestock to different pastures; lethally removing wolves; and issuing shoot-on-site (SOS) permits. Non-lethal control was routinely considered but was often not applicable in many areas in WY due to: 1) specific wolf packs chronically killing livestock year after year; 2) unpredictable travel patterns and movements by wolves; and 3) very large wolf home ranges that cover vast areas where cattle grazed on public grazing allotments. When non-lethal control methods were not effective, wolves were lethally removed in an attempt to prevent further livestock depredations.

We managed wolf population growth and wolf distribution to minimize chronic loss of livestock from wolves. In 2007, we reduced confirmed wolf depredations by >55% compared to 2006 by aggressively removing chronically depredating wolves early in the grazing season. Sixty-three wolves (approximately 24% of the WY wolf population) were lethally removed in control actions in 2007; however, we maintained the WY wolf population well above recovery objectives with 25 confirmed packs and 14 breeding pairs (Figure 11). In addition to agency wolf control, 3 SOS permits were issued in 2007, but no wolves were killed by private citizens.



**Figure 11.** Annual wolf population size and number of confirmed livestock losses/year in WY, 2000 - 2007.

## **WOLF PACKS IN WYOMING OUTSIDE YNP IN 2007**

### ***Confirmed Packs***

Eleven confirmed wolf packs recolonized areas in northwest WY where wolves prey on relatively high native ungulate densities and have relatively low seasonal exposure to domestic

livestock. Livestock depredations in these areas have been relatively few and sporadic since 2003. Pack size and composition are based on our best estimates as of 31 December 2007.

1) *Beartooth Pack*: (8 wolves: 4 adults/4 pups) The Beartooth Pack produced 4 pups in 2007 and were considered a breeding pair. The Beartooth Pack killed 4 cattle in 2007; however, no previous depredations were confirmed in 2003, 2004, 2005, or 2006.

2) *Buffalo Pack*: (13 wolves: 7 adults/6 pups) The Buffalo Pack formed in 2006 usurping the Teton Pack from their territory the same winter. This pack produced its second documented litter in 2007 and was considered a breeding pair. A 2-year old radio-collared female, dispersed from the Buffalo pack in fall 2007 to the Pinnacle Peak Pack, allowing USFWS to confirm that pack. Wolves from the Buffalo Pack killed 1 horse in 2006 and 1 dog in 2007.

3) *Gros Ventre Pack*: (13 wolves: 5 adults/8 pups) The Gros Ventre Pack was again a breeding pair in 2007 with 8 pups. The home range of this pack encompasses a largely unpopulated area. One livestock depredation was confirmed in 2006, but no depredations occurred in 2007.

4) *Huckleberry Pack*: (5 wolves: 3 adults/2 pups) The Huckleberry Pack formed in 2006 and possibly combined with the Sage Pack in 2007. The home range of this pack was almost entirely within the boundaries of Grand Teton National Park. Two pups survived in 2007, and this pack was counted as a breeding pair again in 2007. The Huckleberry Pack was not involved in any depredations in 2006 or 2007.

5) *Pacific Creek Pack*: (13 wolves: 9 adults/4 pups) The Pacific Creek Pack was first documented in 2004, and successful reproduction was documented in both 2006 and 2007. During winter radio collaring, mange was documented in this pack in 2007; no known deaths occurred from mange. This pack was counted as a breeding pair in 2007. The Pacific Creek Pack killed 4 cattle in 2005, but had no depredations in 2006 or 2007.

6) *Pahaska Pack*: ( $\geq 2$  wolves) The Pahaska Pack consists of 1 radio collared female disperser from the Absaroka Pack and at least 1 other wolf. Reproduction is unconfirmed and little else is known about this pack. In 2008, there will be continued monitoring of this pack. The Pahaska Pack was not involved in any depredations in 2007.

7) *Pinnacle Peak Pack*: (6 wolves: unknown composition) The Pinnacle Peak Pack was confirmed in 2007. Numerous reports of wolves in the Pinnacle Peak area led USFWS to investigate. A missing radio collared wolf from the Buffalo Pack was located with 5 other wolves. Reproduction was unconfirmed in this pack. No depredations were recorded for the Pinnacle Peak Pack in 2007.

8) *Snake River Pack*: (11 wolves: 5 adults/6 pups) Reproduction in the Snake River Pack was documented again in 2007 with a minimum 6 pups. Due to their remote location, exact composition was not determined. This pack was again counted as a breeding pair. The Snake River Pack was not involved in any livestock conflicts in 2006 or 2007.

9) Sunlight Pack: (11 wolves: 7 adults/4 pups) The Sunlight Pack was again a breeding pair in 2007. Mange was found in 2003 and 2004 in this pack. In 2005 and 2006, no mange was found; however, mange was found on one wolf during capture in summer 2007. The Sunlight Pack killed 1 calf in 2004, 2 calves in 2005, 1 calf in 2006, and 1 calf in 2007.

10) Teton Pack: (8 wolves: 3 adults/5 pups) The Teton Pack formed in 1998 on the eastern side of Grand Teton National Park. In 2006, the pack did not reproduce; however, in 2007, 5 pups survived until 31 December. A second female dug a den nearby, but there was no indication of a double litter. The Teton Pack killed 1 calf in 2005, 1 calf in 2006, and no livestock in 2007.

11) Togwotee Pack: (10 wolves: 4 adults/6 pups) The Togwotee Pack was again a breeding pair in 2007 with 4 pups. While there were few known locations for this pack, USFWS believes the home range of this pack was largely within designated wilderness. No depredations were confirmed for the Togwotee Pack in 2006 or 2007.

In 2007, home ranges of 14 wolf packs in WY overlapped areas where large numbers of domestic livestock graze on private and public lands. Over the last 4 years, the USFWS has removed many wolves from some of the following packs due to chronic livestock depredations. Some entire packs have been removed more than once; however, new packs have frequently recolonized the area by the following year.

12) Absaroka Pack: (2 wolves: 2 adults) Mange was documented in this pack again in 2007; however, a summer recapture of a wolf, which was mange-infested in winter, showed hair regrowth and no mange. The pack was not a breeding pair in 2007. The Absaroka Pack killed 7 cattle in 2004, 1 calf in 2005, 5 cattle in 2006, and >8 cattle in 2007. Due to continued depredations, all but 2 wolves were removed in control actions in 2007.

13) Big Piney Pack: ( $\geq 2$  wolves) Multiple wolves were again found in the Big Piney region in 2007. Depredations have been chronic in this area in the past, but no depredations were confirmed in 2007. Pack composition and actual numbers are unknown.

14) Black Butte: (2 wolves) At the end of 2006, there were 7 wolves in the Black Butte Pack. One radio-collared wolf went to the Green River, and reformed the Green River Pack. In 2007, one cattle depredation was confirmed, and there were at least 2 wolves in the Black Butte area at year's end. Radio contact with the remaining Black Butte wolves was lost during summer 2007.

15) Daniel Pack: (4 wolves: unknown composition) At the end of 2007, 4 wolves remained in the Daniel Pack. Historically this pack has been involved in chronic depredations, and the entire pack has been removed in past years. In early 2007, this pack killed 1 dog and 1 calf. Three wolves were controlled in April, and no depredations were reported after the control action. Reproduction was not documented, and therefore, the pack was not considered a breeding pair.

16) East Fork Pack: (8 wolves: 4 adults/4 pups) The East Fork Pack was first documented in 2005, but is suspected to have been around since at least 2004. In 2006, a radio collared disperser from the adjacent Washakie Pack joined the East Fork Pack. The East Fork Pack killed 2 cattle in 2005, 2 cattle in 2006, and 6 cattle in 2007. Five wolves were removed in 2007. Confirmed reproduction of 4 pups counts this pack as a breeding pair again in 2007.

17) Green River Pack: (6 wolves: 4 adults/2 pups) With several thousand cattle grazing in the Upper Green River drainage, the Green River Pack has been removed several times due to chronic depredations since 2002. The pack killed >10 cattle in 2002, >9 cattle and 1 sheep in 2003, >20 cattle in 2004, >10 cattle in 2005, >27 cattle in 2006, and 12 cattle in 2007. In 2007, 6 wolves were controlled. By fall 2007, the Green River Pack consisted of 6 wolves, and the pack was counted as a breeding pair in 2007.

18) Greybull River Pack: (8 wolves: 4 adults/4 pups) The Greybull River Pack was again a breeding pair in 2007 with 4 pups. This pack has been involved in chronic depredations due to high numbers of livestock in this area. In 2007, 8 wolves were controlled for confirmed depredations of 2 cattle in an effort to stop depredations.

19) Gooseberry Pack: (6 wolves: 1 adult/5 pups) /Owl Creek (0 wolves) In 2005, all but one wolf were removed from the Owl Creek Pack. This radio collared wolf paired with another wolf to form the Gooseberry Pack in 2006 within a similar home range. Other wolves also reformed the Owl Creek Pack in 2006. Both packs killed livestock in 2006 and members of the Gooseberry Pack were controlled. Again in 2007, these packs killed >8 cattle, and all members of the Owl Creek Pack were removed. Neither pack was counted as a breeding pair at the end of 2007.

20) Kemmerer Pack: (>3 wolves: unknown composition) A group of at least 3 wolves existed in Kemmerer in 2007. No reproduction was confirmed and pack structure is unknown. Chronic depredations have occurred in the Kemmerer area in past years; however, in 2007, no depredations were reported. This pack is not considered a breeding pair.

21) La Barge Pack: (>2 wolves; unknown composition) In 2007, at least 2 wolves were found in the La Barge area. In winter 2007, a wolf incidentally caught in a trap by a bobcat trapper was euthanized by USFWS due to extensive foot injuries. At the time of trapping, another wolf was in the area. In summer 2007, 12 sheep were confirmed killed by wolves in this area. No reproduction was documented, and this was not a breeding pair.

22) Prospect Pack: (>3 wolves: unknown composition) At the end of 2006, 4 uncollared wolves were believed to exist in the Prospect Pack, and in 2007, at least 3 wolves were confirmed. Since 2005, the Prospect Pack has been implicated in multiple depredations—33 sheep in 2005, and 22 cattle in 2006. In 2007, no depredations were reported. No reproduction was documented, and the pack was not counted as a breeding pair.

23) Soda Lake Pack: (5 wolves: unknown composition) Since 2003, occasional wolves have dispersed into the Pinedale corridor. Being an area of abundant livestock, depredations have

been common, and numerous wolves have been controlled. No depredations were reported in 2007. At the end of 2007, 5 wolves were present in the Soda Lake area.

24) South Fork Pack: (10 wolves: 6 adults/4 pups) Since forming in 2005, the South Fork Pack has been involved in numerous depredations killing 3 cattle in 2005, 19 cattle in 2006, and 1 calf in 2007. One wolf was controlled in 2007, and no other depredations were reported. This pack was a breeding pair in 2007. One adult radio collared wolf with severe mange was euthanized after it left the pack and began spending time near a rural housing development.

25) Washakie Pack: (11 wolves: 5 adults/6 pups) The Washakie Pack was again a breeding pair in 2007. This pack has been implicated in numerous depredations since 1998. The Washakie Pack killed >4 cattle in 2003, >8 cattle in 2004, >1 calf in 2005, >4 cattle in 2006 and >6 cattle in 2007. Two wolves were removed in control actions in 2007.

### **Misc./Unconfirmed Packs**

In 2007, we recorded >16 wolves that live in Wyoming outside YNP as either lone wolves or possible unconfirmed non-breeding packs; however, we were not able to confirm any pack activity, pack size, pack composition, or reproduction. We received reports of possible wolf activity in the following areas:

26) Big Horn ( $\geq 2$  wolves) USFWS has never confirmed any reproduction in the Big Horn Mountains. Wolves in this area have been responsible for depredations in past years. In 2007, 4 sheep were confirmed killed by wolves. One wolf was killed by an M-44.

27) Bliss Creek (unknown number of wolves) Wolves were suspected in the Bliss Creek drainage in 2006 and 2007, but numbers and pack composition remain unknown. The Bliss Creek area is remote and has no livestock.

28) Carter Mountain (1 wolf) In past years, chronic depredations have been documented in the Carter Mountain Pack, and depredations continued in 2007. After, two confirmed cattle were killed, all but one wolf were removed in control actions to prevent ongoing depredations as have been seen in the past. Only the radio collared alpha female remains in this pack.

29) Driggs (>2 wolves) Wolves were first documented in the Driggs area in 2005 when a radio collared male dispersed from the Teton Pack. This collar was chewed off by other wolves in 2006, and radio contact was lost. In summer 2006, after killing livestock, 2 wolves were shot by the livestock producer under the amended Idaho 10j rule. Another wolf was radio-collared in summer 2006, but later died of natural causes, and radio contact was again lost. In summer 2007, agency reports of howling of more than 2 wolves indicated the presence of wolves, but confirmation of pack structure and actual numbers were not confirmed.

30) *South of Rock Springs* ( $\geq 4$  wolves: unknown composition) There have been multiple agency reports of at least 4 wolves in the area south of Rock Springs. Pack composition and actual numbers of wolves are unknown.

## **OUTREACH**

### **Outreach in Yellowstone National Park**

Yellowstone Wolf Project staff gave 76 talks and 52 interviews. Talks were at both scientific conferences and to general audiences.

For the seventh straight year wolf project staff rode horseback into outfitter camps near YNP to discuss wolf issues. Accompanying Stahler and Smith this year was Domenic Domenici and Gary Mowad of the USFWS. The location of this year's trip was Gallatin National Forest north of YNP and was coordinated through the Gardiner USFS Office.

### **Outreach in Wyoming outside Yellowstone National Park**

In 2007, the WY wolf recovery program continued to give numerous formal presentations to public schools, universities, wildlife symposiums, state and federal management agencies, livestock association meetings, state legislature committees, and environmental groups. We were also interviewed for numerous magazine, newspaper, and television feature stories.

## **USFWS LAW ENFORCEMENT**

Enforcement efforts continue in WY. The Office of Law Enforcement continues to use traditional enforcement along with programs designated to prevent illegal killing of wolves. Fast and appropriate response to wolf problems by the USFWS and Wildlife Services has done much to ensure that individuals do not become frustrated and illegally kill wolves. Currently, the State of Wyoming has no laws to protect wolves.

## **ACKNOWLEDGEMENTS**

We thank all of the Wolf Project volunteers, especially winter study volunteers, without whom we could not carry on the vital research and management of wolves. We also thank donations and support from five major institutions and organizations: an anonymous donor, the Tapeats Foundation, the Perkins-Prothro Foundation, Canon, Inc., and the National Science Foundation grant DEB-0613730. We recognize the above because our work would not be possible without

their support and involvement. These are our major donors, and we also are supported by numerous smaller donors, especially ones through the collar sponsorship program, that add significantly and are also necessary for our research, management, outreach, education, and publications. We know that a successful program needs a strong base of support and to all the above we are indebted.

We thank our pilots Gary Lust of Mountain Air Research, Dave Stintson from Sky Aviation, Roger Stradley of Gallitin Flying Service, Steve and Lisa Robertson, and Mark Duffy at Central Helicopters. Laboratory work was done by Mattson's Laboratory in Milltown, Montana and Gary Haas of Big Sky Beetle Works in Hamilton, Montana.

Numerous agencies and agency personnel have contributed to the recovery program and we thank Dave Skates and Laurie Connel (USFWS Lander); USFS; Nancy Hall, Dave Cunningham, and Lance Koch at Bridger-Teton National Forest; Shoshone National Forest; Steve Cain and Sarah Dewey from Grand Teton National Park; Barry Reiswig, Dan Huckel, and Eric Cole at the National Elk Refuge; Bureau of Land Management; and Wyoming Game and Fish Department.



# **U.S. Fish and Wildlife Service**

## **Northern Rocky Mountain**

### **Recovery Program Update**

#### **2007**

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## NORTHERN ROCKIES FUNDING

### **Funding for Wolf Management in Federal Fiscal Years 2007 (Oct. 1, 2006-Sept. 30, 2007) and FY 08 (Oct. 1, 2007-Sept. 30, 2008).**

Total Federal Funding- Wolf recovery has been almost entirely funded by federal appropriations and private donations. Wolf recovery in the NRM from 1973 through 2007 cost approximately \$27,273,000 (rounded to nearest \$1,000, with no adjustments for inflation and not including USDA Wildlife Services (WS) costs for investigating reports of suspected wolf damage and problem wolf control beyond the \$100,000/year provided by the USFWS to WS from 1992-2004). If wolf management continues at its current intensity it will cost federal taxpayers about \$3,372,000 in FY08.

USFWS Funding- In FY07, funding for wolf management was similar to FY06 levels. Region 6 of the USFWS (which includes Montana and Wyoming) received about \$2,036,000. Funding for R-1 of the USFWS [Idaho] was \$99,000 for administrative support. Most of the USFWS funding was transferred to Montana, Idaho, and the Nez Perce Tribe (NPT). The USFWS spent \$240,000 for wolf management in Wyoming in FY07 and that included \$50,000 to support a cooperative WY WS/USFWS position in Cody, WY. R-6 funding [\$140,000] also supported overall program coordination, rulemaking, assisting the Department of Justice, and administrative support in Helena, MT. FY08 funding for the USFWS appears similar to FY07 levels.

State and Tribal Funding- In FY07, the USFWS transferred \$641,000 (a Congressional earmark of \$318,000 and \$323,000 from USFWS base funding) to Montana Fish, Wildlife and Parks for wolf monitoring, management, control, and outreach. In FY07 Idaho received \$720,000 in Congressional earmarks and the NPT received \$295,000. The Idaho Governor's Office of Species Conservation and IDFG used \$99,000 to compensate livestock producers in Idaho for missing livestock and to make up the remaining 50% for probable livestock depredations that are only reimbursed at a 50% value by the private compensation program in Idaho. In FY08 administration of wolf funding to the States and Tribes was delegated to R-6.

National Park Funding- Yellowstone National Park maintained their NPS-funded wolf monitoring and research program at the \$167,000 level in FY07 and FY08. All their field research projects remain funded by private donations (\$250,000/yr). Teton National Park spent \$45,000 for salaries and telemetry flights and \$20,000 in private donations was used to purchase Argos GPS collars for cooperative wolf-related research in and near Grand Teton National Park. The USFWS in Wyoming funded and conducted the wolf capture associated with that project.

USDA Wildlife Services Funding- In FY07 WS maintained a \$100,000 Congressional directive for responding to complaints of wolf damage as well as a \$1,300,000 directive for Montana, Idaho, and Wyoming to investigate and address predator damage, including that by wolves. The \$1,300,000 Congressional earmark for WS was reduced by \$300,000 in the FY08 Dept. of Agriculture budget. In FY07 WS in Idaho spent approximately \$387,000 of appropriated and cooperative funds responding to complaints of reported wolf damage, conducting control and

management actions (salary and benefits, vehicles, and travel) and for other wolf-related costs (equipment and supply purchases, coordination and meeting attendance, etc.). Montana WS spent approximately \$183,000 and \$222,000 was spent in Wyoming for wolf-related field activities, but those estimates do not cover attending meetings and administrative costs associated with wolf management. In total WS spent at least \$792,000 in FY07 on wolf-related issues in the northern Rocky Mountains.

Non-federal Funding For Wolves- Only the salary of a Yellowstone National Park biologist and administrative support is provided by the NPS. The Yellowstone Foundation secured commitments for private donations at \$250,000/year for 10 years for wolf and wolf-related research in Yellowstone National Park. Grand Teton National Park was given \$20,000 in private funding in FY07 for wolf-related research. The private TESF continued to fund the salary and benefits of an experienced wolf field biologist in Bozeman, Montana [valued at \$60,000/yr]. That biologist is a MFWP volunteer, and logistic and field support and direct supervision are provided by the MFWP (costing about \$20,000/yr in federal transfer funding). That employee helps MFWP to monitor wolves and resolve conflicts between wolves and private landowners in southwest Montana. Defenders of Wildlife continues to provide a compensation program for livestock confirmed [100%] or probably [50%] killed by wolves. In 2007 \$204,635 was paid, with expenditures of more than \$854,000 from 1987 through December 2007 (\$287,724 in MT; \$254,612 in ID; and \$311,775 in WY; [www.defenders.org/wolfcompensation](http://www.defenders.org/wolfcompensation)). Defenders also provided about \$81,000 for nonlethal wolf control measures. Universities in Idaho, Montana and Wyoming and elsewhere also provided substantial funding and support for their graduate students that are conducting numerous wolf and wolf-related research projects. In addition, some livestock producers on both private land and public land grazing allotments have had to absorb the increased expenses and costs related to grazing livestock near wolves. Those costs are not quantifiable but are likely several times higher than annual compensation payments. They include some proportion of livestock damage from causes that couldn't be determined and missing livestock (Oakleaf et al. 2003).

FY08 Budget- In FY07 Congress appropriations language contained directed wolf funding to Montana, Idaho, and the Nez Perce Tribe. In FY08 those earmarks were eliminated, but were instead included in the R-6 USFWS base funding. However, Congress directed an additional \$243,000 for wolf monitoring in Montana, Idaho, and Wyoming in the FY08 budget. That funding will be divided evenly among the States.

## **NORTHERN ROCKIES PLANNING LEGAL ISSUES, and FEDERAL PERSONNEL**

### **Delisting of the Gray Wolf**

Wolves, once common throughout North America, became protected under the ESA in 1974, because human persecution nearly eliminated them from the contiguous United States. After the 1930's there were virtually no wolves left in the Northern Rocky Mountains [NRM]. The ESA prohibited people from harming wolves and mandated that all federal actions seek to conserve

and not jeopardize wolves. Ultimately, 3 distinct wolf recovery programs, Midwest, NRM, and Southwest, were initiated. The Midwest wolf population was delisted on February 8, 2007 but efforts to recover wolves in the Southwest continue. In the NRM, 2007 marked the seventh consecutive year that 30 or more breeding pairs and over 300 wolves were documented in Montana, Idaho and Wyoming. The population of about 1,500 wolves in about 105 breeding pairs has fully achieved its biological recovery objectives.

The USFWS proposed delisting of the NRM wolf population on February 8, 2007 (72 FR 6106) because it determined that the population was recovered and State management plans guaranteed that wolves would not become threatened again if the ESA protections were removed. The ESA contains several checks and balances to ensure that any decision to delist a species is scientifically sound and will not result in a species being relisted. The ESA requires that all decisions be based on the best scientific data available. The USFWS must examine all of the factors that might cause a species to become threatened and to determine that they are not likely to cause the species to become threatened again. Regulating the level of human-caused mortality was the primary factor that had to be resolved before delisting wolves could be proposed. The ESA requires that USFWS determine that regulations, other than the ESA, will prevent unchecked human-caused mortality from once again driving wolves toward extinction.

Wildlife mortality is typically regulated by State fish and wildlife management agencies. The USFWS requested that Montana, Idaho, and Wyoming develop state wolf management plans to show how their states would conserve wolves. In addition, the USFWS believed that state wolf plans would help the public to understand the consequences of delisting and would provide a

#### **Federal Funding for Wolf Management in FY2007 and FY2008 (\*estimated) [\$1,000's]**

<b>Fiscal Year</b>	<b>FY 2007</b>	<b>FY2008*</b>
<b><i>USFWS-Region 6</i></b>	\$2,036	\$2,269
State of Montana [USWS Base Funding]	(\$ 641)	(\$ 641)
USFWS in Wyoming	(\$ 240)	(\$ 240)
Idaho Office of Species Conservation	(\$ 720)	(\$ 720)
Nez Perce Tribe	(\$ 295)	(\$ 285)
USFWS Administration & Coordination R-6	(\$ 140)	(\$ 140)
Additional Congressional Earmark	\$ 0	(\$ 243)
<b><i>USFWS-Region 1</i></b>	\$ 99	\$ 99
<b>SUBTOTAL</b>	<b>\$2,135</b>	<b>\$2,368</b>
<b>USDA Wildlife Services</b>	\$ +792	\$ +792
<b>National Park Service- Yellowstone</b>	\$ 167	\$ 167
<b>National Park Service- Grand Teton</b>	\$ 45	\$ 45
<b>TOTAL</b>	<b>\$3,139</b>	<b>\$3,372</b>
* estimated		

solid administrative foundation for the final decision. The USFWS provided various degrees of funding and assistance to the states while they developed their wolf management plans. State laws, as well as state management plans, must be consistent with long-term conservation of the wolf population. The Service determined that Montana and Idaho's plans were adequate in 2004 but determined Wyoming's regulatory framework was not adequate. On April 13, 2007, the Wind River Tribe approved a wolf management plan for their tribal lands in northwestern Wyoming. The USFWS determined it adequately addressed the ESA criteria shortly thereafter. The links for the state wolf plans for Montana, Idaho and Wyoming and the Wind River Tribe are available at <http://westerngraywolf.fws.gov>.

In February 2007, the Wyoming Governor signed legislation (Wyoming House Bill 231) that allowed for development of a revised Wyoming wolf management plan. A new wolf management plan was approved by the Wyoming Game and Fish Commission on November 16, 2007. It addressed all the USFWS concerns about Wyoming's 2003 plan and on December 15, 2007 the USFWS Director determined it met the requirements of Endangered Species Act, contingent on the sunset provisions of the Wyoming law being satisfied so Wyoming's wolf management plan could be fully implemented.

The delisting proposal was open for public comment for a total of 90 days and 8 public hearings were held. The proposed delisting rule received over 283,000 public comments. A final rule regarding wolf delisting in the NRM DPS is expected to be published on or before February 28, 2008. The delisting rule would become legally effective 30 days after publication in the Federal Register.

If the wolf population is delisted, the ESA requires a mandatory, minimum 5-year post-delisting federal oversight period. That period, during which the USFWS reviews the implementation of State management plans and wolf population status, provides a safety-net to ensure that the species is able to sustain itself without ESA protection. If wolves became threatened again, the USFWS could relist them by emergency order.

### **The Experimental Population Rule**

The USFWS's February 7, 2005 10j regulation expanded the authority of States and Native American Tribes with USFWS-approved post-delisting wolf management plans to manage gray wolves in the experimental population areas of CID and GYA. Gray wolves were reintroduced in parts of the NRM as nonessential experimental populations under the ESA in 1995 and 1996. This designation allowed Federal, State and Tribal agencies and private citizens more flexibility in managing wolves. The rule also allowed the States and Tribes with FWS-approved wolf management plans to lead wolf management in their States. This regulation would only apply in Wyoming after its wolf management plan that was fully authorized by the 2007 Wyoming State law. That is likely to occur in early March 2008.

On July 6, 2007 the USFWS proposed that the 2005 nonessential experimental population regulation be modified (72 FR 36942). The modification would allow States and Tribes with

Service-approved post-delisting wolf management plans to develop science-based proposals to lethally remove wolves shown to be seriously affecting ungulate herds. In addition it would allow anyone on private land or public land to shoot a wolf that was attacking their dog or stock animals. The proposed rule change received over 262,000 public comments. The rule was finalized on February 28, 2008 (73 FR 4720) and will become legally effective on February 27, 2008.

## **Litigation**

The January 28, 2008 modification to the 2005 nonessential experimental population rule is being litigated by a coalition of an individual and seven environmental/animal rights groups (U.S. District Court for Montana, Missoula CV 08-14-M-DWM). Any decision (likely to be published on or before February 28, 2008) on establishing a NRM Distinct Population Segment for the gray wolf and removing it from the list of threatened and endangered Species will also certainly be litigated.

State of Wyoming et al. v. United States Department of the Interior et al., United States District Court for the district of Wyoming, Civil Action No 06-245J. This case involves the USFWS's rejection of Wyoming's petition to establish a NRM DPS for wolves and delist them (71 FR 43410). That case is ongoing but it is widely anticipated that in March 2008, Wyoming will certify that all its claims in that case have been satisfied after the USFWS addresses all the mandatory factors detailed in the 2007 Wyoming wolf law. The last factor that needs to be resolved is the publishing a final NRM wolf delisting rule by Feb 28<sup>th</sup>, 2008 and the Wyoming Governor thereby certifying all Wyoming's legal claims have been resolved.

State of Wyoming, et al. vs. United States Department of the Interior, et al., United States District Court for the district of Wyoming, Civil Action No. 04CV01123J. This case involved the USFWS not approving the Wyoming state wolf management plan. The case was expanded by interveners to include alleged failure to properly manage wolves in Wyoming and failure to conduct additional NEPA compliance. The Wyoming District Court ruled in the USFWS favor based on procedural grounds in 2005. Wyoming appealed that case to the 10<sup>th</sup> Circuit Court of Appeals in Denver Colorado, and it upheld the lower court decision. As a result of those court decisions Wyoming formally petitioned the Service to establish and delist a NRM DPS for the gray wolf.

## **USFWS Wolf Personnel**

MFWP began managing wolves in northwestern Montana in early 2004, under a cooperative agreement with the Service, after the USFWS wolf biologist [Tom Meier] for that area left. In June 2005, the USFWS and Montana Fish, Wildlife and Parks [MFWP] signed a cooperative agreement transferring the decision making authority for all wolf management activities in Montana, including the experimental populations in southern Montana, and the remaining USFWS wolf biologist position for Montana [Joe Fontaine] was eliminated. In January 2006, the Governor of Idaho signed a Memorandum of Agreement with the Secretary of the Interior giving Idaho Department of Fish and Game the decision making authority for all wolf

management activities in Idaho. The USFWS biologist that had been conducting that work retired [Carter Niemeyer]. Since that time all wolf management in Montana and Idaho has been conducted with federal funding but by the State wildlife agencies who hired staff to assume those duties. The Nez Perce Tribe continued to assist with wolf monitoring in Idaho under a cooperative agreement with Idaho. The USFWS still manages wolves in Wyoming but, depending on if delisting is delayed by litigation, Wyoming Game and Fish may decide to assume all those duties under a cooperative agreement with the USFWS just as the other States have done. The USFWS field efforts in Wyoming will remain in place to assist with any transition to full Wyoming Game and Fish management at least through October 1, 2008.

Amelia Orton-Palmer was designated as the USFWS assistant wolf recovery coordinator to help analyze public comments and prepare and finalize the federal wolf rules proposed in 2007. The USFWS wolf program staff are currently Ed Bangs, the Wolf Recovery Coordinator in Helena, Montana; Mike Jimenez the Project Leader for Wolf Recovery in Wyoming who is stationed in Jackson, Wyoming; and Amelia Orton-Palmer who is stationed in the USFWS Regional Office in Denver Colorado.

## **ABBREVIATIONS AND ACRONYMS**

Central Idaho wolf recovery area	CID
Defenders of Wildlife	DOW
Distinct Population Segment	DPS
Endangered Species Act	ESA
Glacier National Park	GNP
Grand Teton National Park	GTNP
Greater Yellowstone wolf recovery area	GYA
Idaho Department of Fish and Game	IDFG
Montana Fish, Wildlife and Parks	MFWP
Montana State University	MSU
Nez Perce Tribe	NPT
Northwest Montana Wolf Recovery Area	NWMT
Northern Rocky Mountains	NRM
Predator Conservation Alliance	PCA
Turner Endangered Species Fund	TESF
University of Montana	UM
USDA/APHIS/Wildlife Services	WS
U.S. Fish and Wildlife Service	USFWS
U.S. Forest Service	USFS
U.S. National Park Service	NPS
Wyoming Game and Fish Department	WYGF
Yellowstone Center for Resources	YCR
Yellowstone National Park	YNP

## CONTACTS

### **For further information or to report wolf sightings, please contact:**

Please remember wolf management in Montana and Idaho is conducted by MFWP and IDFG and they should be the first point of contact in each state for everything except law enforcement-

Montana Fish, Wildlife and Parks, Helena, MT:	(406) 444-3242
Montana Fish, Wildlife and Parks, Kalispell, MT:	(406) 751-4586
Montana Fish, Wildlife and Parks, Dillon, MT:	(406) 683-2287
Montana Fish, Wildlife and Parks, Bozeman, MT:	(406) 994-6371
MFWP, TESF Volunteer, Bozeman, MT	(406) 556-8514
Nez Perce Tribal Wolf Program, McCall ID:	(208) 634-1061
Idaho Fish and Game, Boise, ID	(208) 334-2920
Idaho Fish and Game, Salmon, ID	(208) 756-2271
Idaho Fish and Game, Nampa, ID	(208) 465-8465
U.S. Fish and Wildlife Service, Helena MT:	(406) 449-5225
U.S. Fish and Wildlife Service, Jackson, WY:	(307) 330-5631
U.S. Fish and Wildlife Service, Boise ID:	(208) 378-5639
Yellowstone Center for Resources, YNP WY:	(307) 344-2243

### **To report livestock depredations:**

USDA/APHIS/Wildlife Services, Montana:	(406) 657-6464
USDA/APHIS/Wildlife Services, Wyoming:	(307) 261-5336
USDA/APHIS/Wildlife Services, Idaho:	(208) 378-5077
USDA/APHIS/Wildlife Services toll free:	(866) 487-3297

### **To report discovery of a dead wolf or information regarding the illegal killing of a wolf:**

U.S. Fish and Wildlife Service Special Agent, Billings, MT:	(406) 247-7355
U.S. Fish and Wildlife Service Special Agent, Missoula, MT:	(406) 329-3000
U.S. Fish and Wildlife Service Special Agent, Casper, WY:	(307) 261-6365
U.S. Fish and Wildlife Service Special Agent, Lander, WY:	(307) 332-7607
U.S. Fish and Wildlife Service Special Agent, Cody, WY:	(307) 527-7604
U.S. Fish and Wildlife Service Special Agent, Boise, ID:	(208) 378-5333
U.S. Fish and Wildlife Service Special Agent, Idaho Falls, ID	(208) 523-0855
U.S. Fish and Wildlife Service Special Agent, Spokane, WA	(509) 928-6050



## WEBSITES

USFWS Rocky Mountain weekly and annual wolf updates:  
<http://westerngraywolf.fws.gov/>

USFWS Midwestern gray wolf recovery, national wolf reclassification proposal:  
<http://midwest.fws.gov/wolf/>

USFWS Endangered Species Program:  
<http://endangered.fws.gov/>

USDA/APHIS/Wildlife Services:  
<http://www.aphis.usda.gov/ws/>

National Wildlife Research Center:  
<http://www.aphis.usda.gov/ws/nwrc/>

Nez Perce Tribe Wildlife Program and 2001 progress report:  
[http://www.nezperce.org/Programs/wildlife\\_program.htm](http://www.nezperce.org/Programs/wildlife_program.htm)

Turner Endangered Species Fund:  
<http://www.tesf.org/>

Yellowstone Park Foundation:  
<http://www.ypf.org/>

Yellowstone Wolf Tracker:  
<http://www.wolftracker.com/>

Yellowstone National Park wolf pack data:  
<http://www.nps.gov/yell/nature/animals/wolf/wolfup.html>

Wolf Restoration to Yellowstone:  
<http://www.nps.gov/yell/nature/animals/wolf/wolfrest.html>

Montana Fish, Wildlife and Parks wolf management planning:  
<http://www.fwp.mt.gov/wildthings/tande/wolf/wolf.html>

Montana State University wolf-ungulate research:  
<http://www.homepage.montana.edu/~rgarrott/wolfungulate/index.htm>

Idaho Fish and Game:  
<http://www.state.id.us/fishgame/>

Idaho Office of Species Conservation:  
<http://www.state.id.us/species/>

Wyoming Game and Fish Department:  
<http://gf.state.wy.us/>

Wyoming agricultural statistics:  
<http://www.nass.usda.gov/wy/>

Idaho agricultural statistics:  
<http://www.nass.usda.gov/id/>

Montana agricultural statistics:  
<http://www.nass.usda.gov/mt/>

National agricultural statistics:  
<http://usda.mannlib.cornell.edu/reports/nassr/livestock/>

Defenders of Wildlife wolf compensation trust:  
<http://www.defenders.org/wolfcomp.html>

International Wolf Center:  
<http://www.wolf.org/>

Wolf Recovery Foundation:  
<http://forwolves.org/>

Wolf news reports:  
<http://www.forwolves.org/ralph/wolfrpt.html>

National Wildlife Federation wolf information:  
<http://www.nwf.org/wildlife/graywolf/>

Montana Stockgrowers' Association  
<http://www.mtbeef.org/index.htm>

National Geographic wolf information:  
<http://www.nationalgeographic.com/tv/specials/wolf/intro.html>

Wolf Education and Research Center:  
<http://www.wolfcenter.org/>

People Against Wolves:  
<http://home.centurytel.net/PAW/home.htm>

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